

## **APPENDIX F.**

### **Success of Businesses in the Georgia Construction and Engineering-related Industries**

BBC examined the success of minority- and women-owned firms (MBE/WBEs), assessing whether business outcomes for those firms differ from those of majority-owned firms (i.e., firms not owned by minorities or women) in the construction and engineering-related industries.

In this and other marketplace appendices, engineering-related work refers to architectural, engineering and related services. Each reference to “engineering-related” work refers to these types of services.

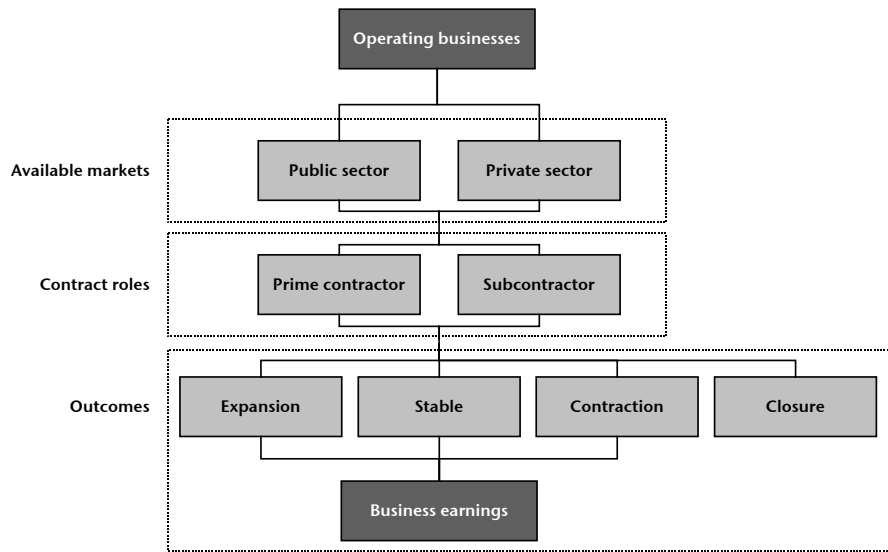
BBC researched outcomes for MBE/WBEs and majority-owned businesses in terms of:

- Participation in public versus private sector markets;
- Participation as prime contractors and subcontractors;
- Sizes of contracts bid on and performed;
- Businesses discontinuing operations;
- Businesses expanding or contracting;
- Business receipts and earnings;
- Size distribution of gross revenue; and
- Difficulties and barriers to starting and expanding a business.

Figure F-1 provides a framework for the analysis.

**Figure F-1.**  
**Business success**

Source:  
BBC Research & Consulting.



The study team begins this section by examining data collected from interviews with Georgia businesses as part of BBC's availability interviews. Those data include information about firms' involvement on public and/or private sector work, such as:

- Whether firms had bid on and won contracts in study industries and the size of those projects; and
- Whether firms had worked as prime contractors, subcontractors or both.

BBC also examined firms' responses to questions concerning potential barriers to bidding and business success in the local marketplace.

After examining data from the availability interviews, the study team then turns to federal data for Georgia and the nation concerning business closures, expansion and contraction. Using those data and information collected from availability interviews, BBC concludes this appendix with an analysis of business earnings.

## Markets, Contract Roles and Bid Capacity

As part of the disparity study, the study team performed availability interviews (mostly by telephone) with construction and engineering-related firms in Georgia. The study team conducted interviews in 2011. Results provide information related to bidding on public and private sector work as well as prime contracts and subcontracts. The study team also examined data on the largest contracts firms bid on or received. Firm owners and managers were also asked about potential difficulties in the marketplace. Appendix C describes the interview methodology in detail.

Results from the availability interviews pertain to businesses with Georgia locations that reported working within the Georgia transportation contracting industry (i.e., does work or provides materials related to construction, maintenance or design of roads and highways).

- Because of the relatively small number of firms representing specific minority groups, BBC reports results from the availability interviews in aggregate for minority-owned firms (“MBEs” regardless of whether they are certified as an MBE or a DBE). Note that results for MBEs include minority women-owned firms.
- Responses for white women-owned firms are shown as “WBE,” regardless of whether they are certified as a WBE or a DBE.
- “Majority-owned firms” are all firms not owned or controlled by minorities or women.

**Public sector versus private sector work.** BBC examined whether minority- and women-owned transportation contracting firms were less likely to work in the private sector than the public sector.

The study team separately examined responses for firms in construction and engineering-related subindustries. Results indicate whether a firm had pursued public or private sector work.<sup>1,2</sup>

**Construction firms.** The pie charts in Figure F-2 present the distribution of majority-, minority- and women-owned firms competing for government and private sector prime contracts and subcontracts, based on responses from availability interviews.

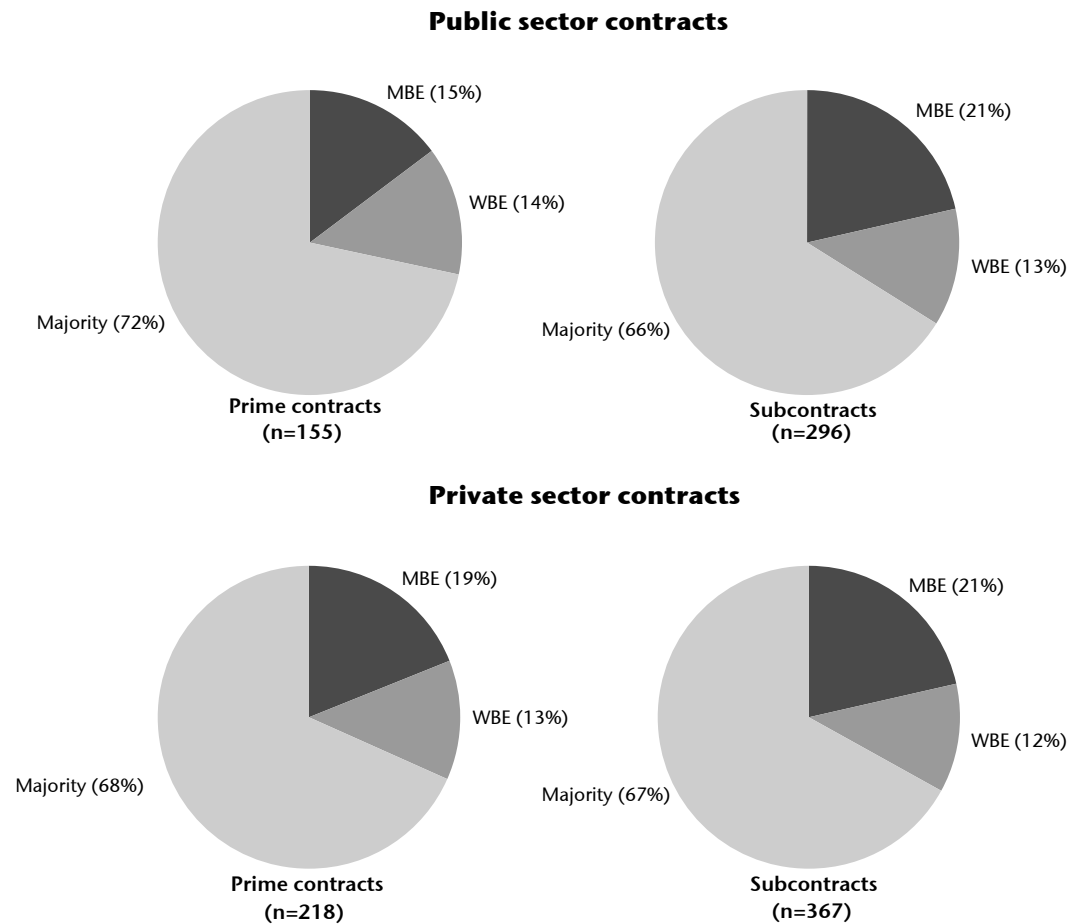
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<sup>1</sup> A firm was deemed to have performed or bid on public sector work if it answered “yes” to either of the following questions: (a) “Next, I have a few questions about your company’s role in construction, maintenance or design work related to roads and highways. During the past five years, has your company submitted a bid or a price quote for any part of a state or local government project in Georgia?”; or (b) “During the past five years, has your company received an award for work as a prime contractor, a subcontractor, a trucker/hauler, or as a supplier to any part of a state or local government project in Georgia?”

<sup>2</sup> A firm was deemed to have performed or bid on private sector work if it answered “yes” to either of the following questions: (a) “Again thinking about construction, maintenance or design work related to roads and highways during the past five years, has your company submitted a bid or a price quote for any part of a private sector contract in Georgia?”; or (b) “During the past five years, has your company received an award for work as a prime contractor, a subcontractor, a trucker/hauler, or as a supplier for any part of a private sector contract in Georgia?”

- Of the 155 construction industry firms that reported bidding on public sector prime contracts in the past five years, 72 percent were majority-owned, 15 percent were MBEs and 14 percent were WBEs.
- The share of firms bidding as primes that were MBEs was higher (19%) for private sector work.
- Among the 296 firms that reported competing for public sector subcontracts, two-thirds were majority-owned, 21 percent were MBEs and 13 percent were WBEs. The representation of MBE/WBEs among firms bidding on subcontract work was about the same between public sector and private sector contracts.

**Figure F-2.**  
MBEs, WBEs and majority-owned construction firms bidding on public sector and private sector of work in Georgia in the past five years



Note: "WBE" represents white women-owned firms.  
Total may not add to 100 percent due to rounding.

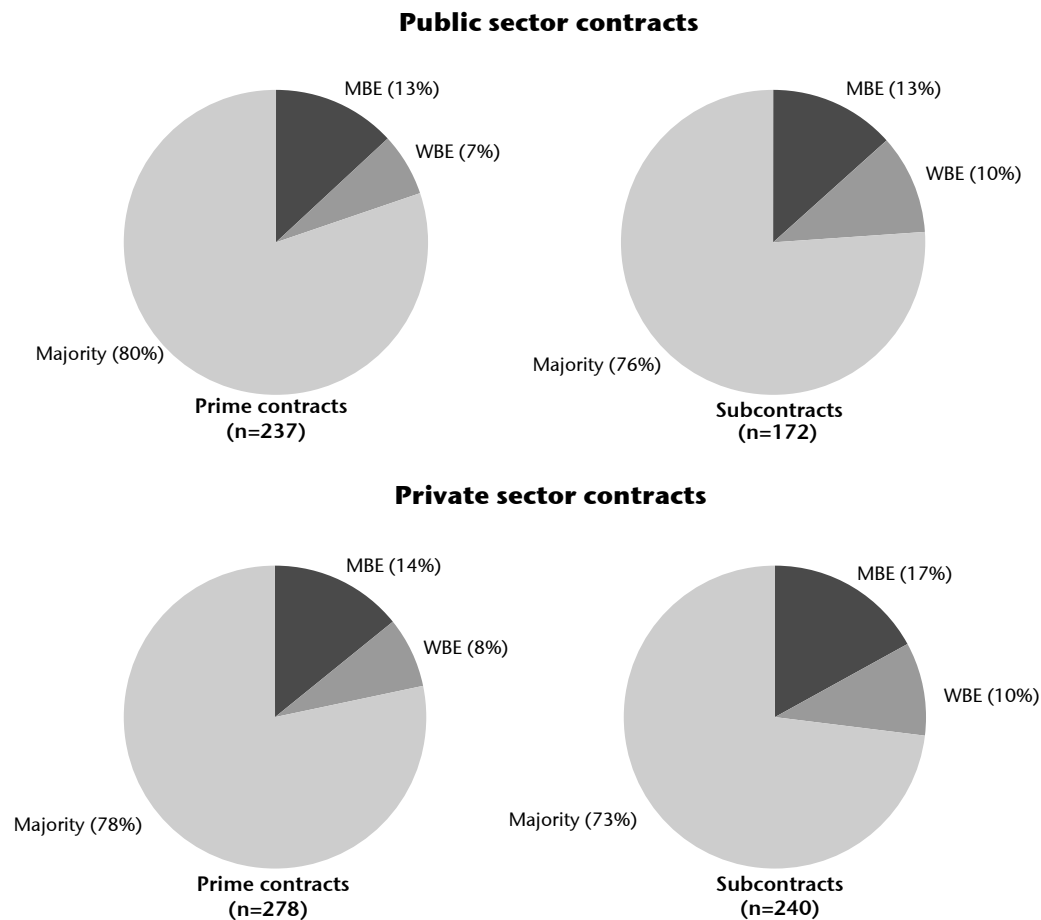
Source: BBC Research & Consulting from 2011 Availability Interviews.

Firms competing for public sector work in Georgia were also asked if they had been awarded any public sector contracts (including both prime contracts and subcontracts). When asked to consider the past five years, about 80 percent of MBEs and majority-owned construction firms reported that they had been successful in obtaining work. A larger share of WBE construction firms bidding on public sector work said that they had been successful in obtaining some work (87%).

Nearly 90 percent of WBEs and majority-owned firms bidding on private sector work indicated that they had received such work. However, only 78 percent of MBEs competing for private sector prime contracts or subcontracts indicated that they had been successful.

**Engineering-related firms.** The study team also analyzed the representation of minority- and women-owned engineering-related firms among businesses competing for government and private sector prime contracts and subcontracts. MBE/WBEs were about 20 percent of firms competing for public sector prime contracts and private sector prime contracts. MBE/WBEs comprised 27 percent of firms pursuing subcontracts in the private sector, more than the MBE/WBE representation among firms seeking subcontracts in the public sector (23%).

**Figure F-3.**  
**Share of engineering-related firms bidding on public sector and private sector work in Georgia in the past five years**



Note: "WBE" represents white women-owned firms.  
Total may not add to 100 percent due to rounding.

Source: BBC Research & Consulting from 2011 Availability Interviews.

As with construction firms, engineering-related firms competing for public sector and private sector work were asked if they had received any such work in the past five years.

- Three-quarters of majority-owned firms proposing on public sector work said that they had received public work.
- A higher proportion of WBEs seeking public sector work (83%) indicated that they had received some work.
- Only 70 percent of MBEs indicated that they had received some public sector work.

Turning to engineering-related firms competing for private sector work:

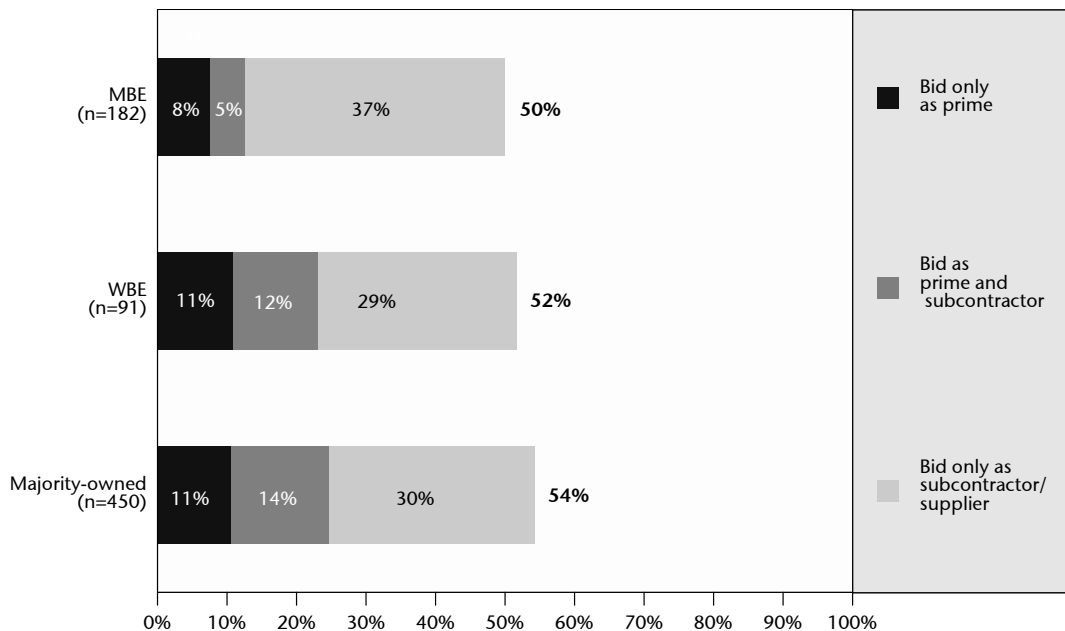
- About 86 percent of majority-owned firms and 91 percent of WBEs pursuing private sector work reported receiving some contracts or subcontracts.
- Only 78 percent of MBEs pursuing private sector prime contracts or subcontracts reported receiving at least some private sector work.

**Bidding as prime contractors and subcontractors/suppliers.** The next four figures examine — for MBEs, WBEs and majority-owned firms — the percentage of firms bidding in different roles (as prime contractors, subcontractors, or both). These results are based on the same availability interview questions discussed above, and pertain to bidding within the Georgia transportation contracting industry within the past five years.

**Construction firms.** Figure F-4 examines the share of majority-, minority and women-owned Georgia construction firms that reported bidding on public sector work as a prime contractor (dark portion of bar), a subcontractor (light portion of bar) or as both (middle portion of bar).

- Approximately 54 percent of majority-owned construction firms that reported being qualified and interested in future construction work bid on public sector work as a prime contractor or a subcontractor in the past five years (including submitting price quotes). About 11 percent bid only as a prime contractor and 30 percent bid only as a subcontractor.
- A similar percentage (52%) of WBEs reported bidding on public sector work in the past five years, as shown in Figure F-4. About 11 percent had bid only as a prime contractor, and 29 percent of WBEs bid only as a subcontractor on public sector construction work.
- Compared to majority-owned firms, a smaller share of MBEs reported bidding on public sector work as a prime contractor or a subcontractor in the past five years (50%). About 37 percent of MBEs bid only as a subcontractor, and 8 percent bid only as a prime contractor.
- A smaller share of MBEs reported bidding on public sector work as a prime contractor in the past five years (13%) than majority-owned (25%) and WBE (23%) construction firms.

**Figure F-4.**  
Percent of construction firms that reported submitting a bid for any part of a public sector project in Georgia in the past five years



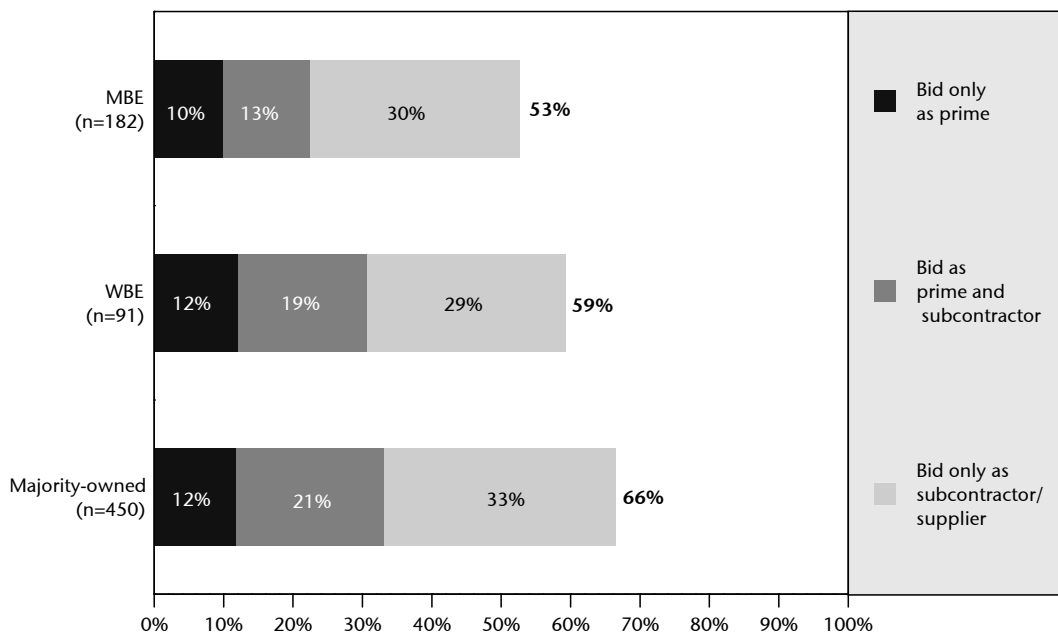
Note: "WBE" represents white women-owned firms.

Source: BBC Research & Consulting from 2011 Availability Interviews.

The study team also asked firm owners and managers if the firm had bid on a private sector construction project in the past five years. Figure F-5 presents the share of minority-, women- and majority-owned construction firms that reported bidding on private sector work as a prime contractor, a subcontractor or as both.

- A larger share of majority-owned firms (66%) reported bidding on private sector construction work in that past five years than MBEs (53%) and WBEs (59%).
- One-third of majority-owned firms, 30 percent of MBEs and 29 percent of WBEs reported submitting bid or price quotes in the past five years for private sector work only as a subcontractor.
- Compared to majority-owned firms (33%) and WBEs (31%), a smaller share of MBEs reported bidding on private sector work as a prime contractor in the past five years (23%).

**Figure F-5.**  
**Percent of construction firms that reported submitting a bid for any part of a private sector project in Georgia the past five years**



Note: "WBE" represents white women-owned firms.

Source: BBC Research & Consulting from 2011 Availability Interviews.



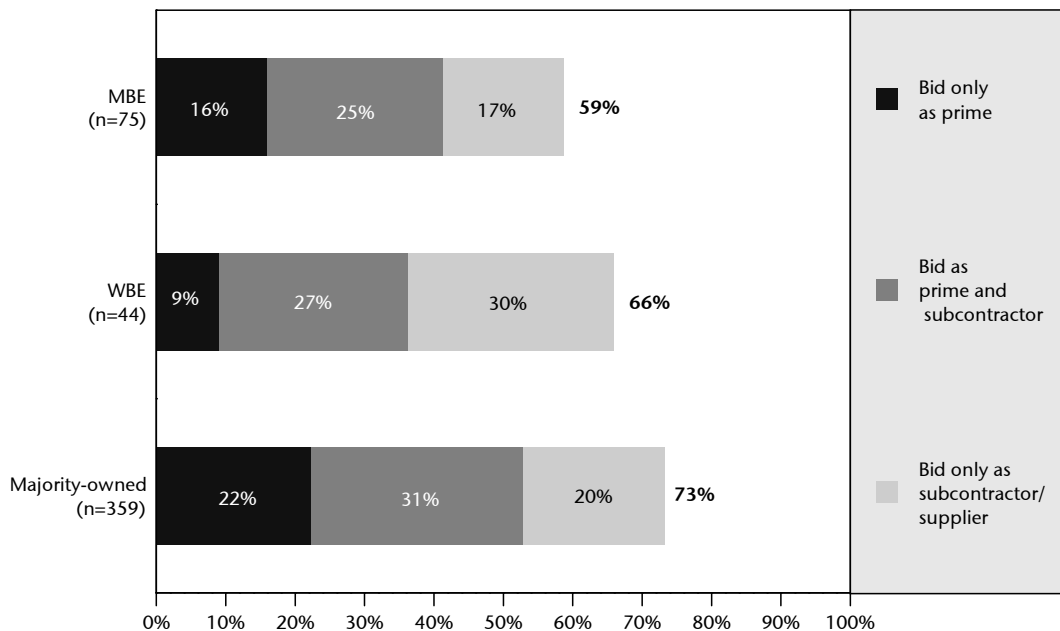
**Engineering-related firms.** Figures F-6 and F-7 examine prime contract versus subcontract bidding for engineering-related firms, based on data from the availability interviews.

Figure F-6 shows that overall, majority-owned firms (73%) were more likely to bid on public sector contracts than MBEs (59%) and WBEs (66%).

- For WBEs, this difference was due to a smaller percentage of firms proposing as prime consultants (36% compared to 53%).
- Relatively fewer MBEs reported bidding as prime consultants and as subconsultants on private sector work (compared with majority-owned firms).

**Figure F-6.**

**Percent of engineering-related industry firms that reported submitting a bid for any part of a public sector project in Georgia the past five years**



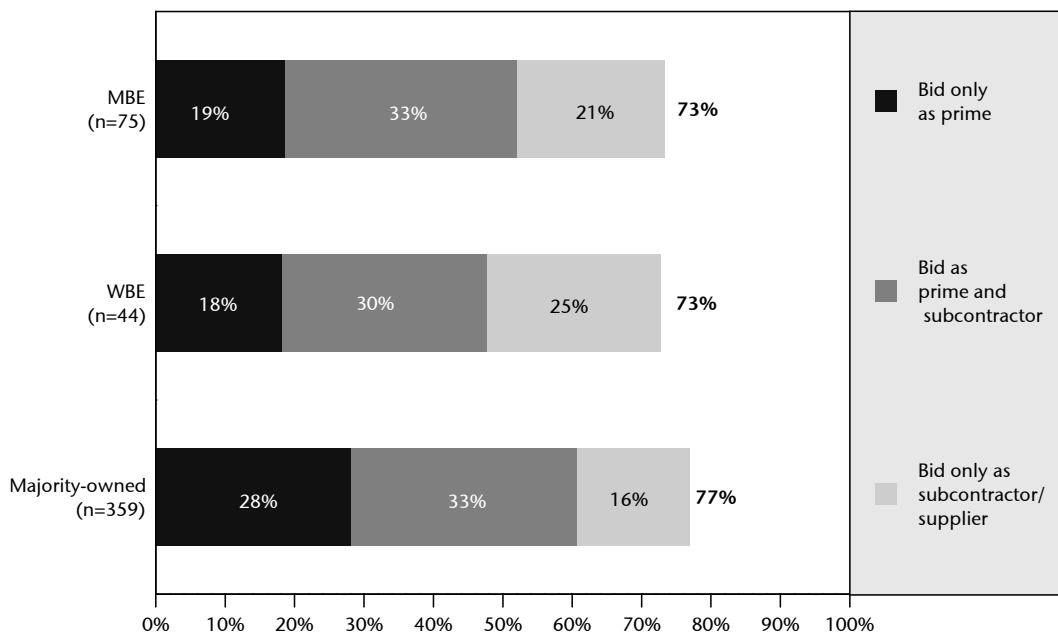
Note: "WBE" represents white women-owned firms.

Source: BBC Research & Consulting from 2011 Availability Interviews.

Figure F-7 presents results for engineering-related firms bidding on private sector work in the past five years.

- Overall, the same share of MBEs (73%) and WBEs (73%) said that they had bid on private sector engineering-related contracts within the past five years. A slightly higher share of majority-owned firms (77%) reported bidding on private sector contracts within the past five years.
- Majority-owned engineering-related firms were also more likely to bid on private sector prime contracts. About 61 percent of majority-owned firms had submitted a bid or price quote as prime contractors in the past five years. About 52 percent of MBEs and 48 percent of WBEs had bid on such prime work in the past five years. Over one-quarter (28%) of majority-owned firms reported bidding as only a prime contractor on private sector work.

**Figure F-7.**  
Percent of engineering-related industry firms that reported submitting a bid for any part of a private sector project in the past five years



Note: "WBE" represents white women-owned firms.

Source: BBC Research & Consulting from 2011 Availability Interviews.

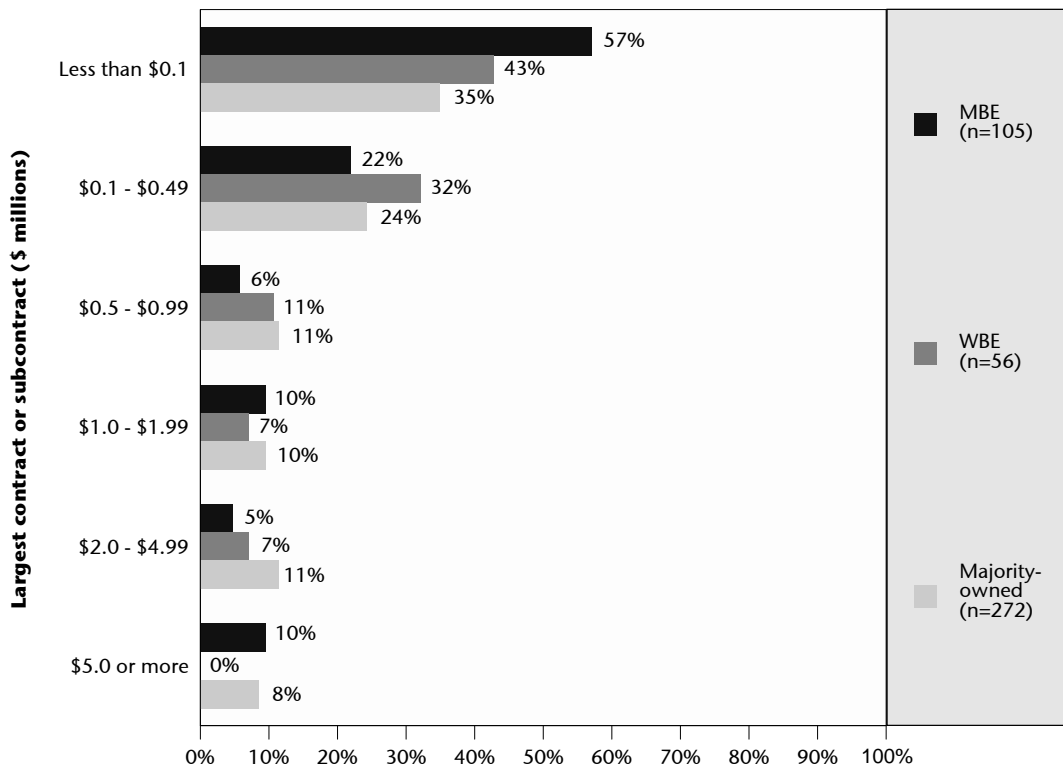
**Largest contract in Georgia in the past five years.** As part of the availability interviews, the study team asked firms to identify the largest contract each firm was awarded in Georgia in the past five years.

**Construction firms.** Among construction firms in the availability interviews, 29 percent of majority-owned firms reported that the largest contract they received was worth \$1 million or more. A smaller share of MBEs (25%) reported that they had received a contract of this size, and only 14 percent of WBEs won work worth \$1 million or more.

Compared to majority-owned firms (8%), a slightly larger share of MBEs (10%) reported winning construction work worth \$5 million or more. No WBEs reported receiving work \$5 million or more in that past five years.

More than one-half of MBE construction firms reported that the largest contract they received was less than \$100,000 (compared with only one-third of majority-owned firms).

**Figure F-8.**  
**Largest contract or subcontract that the company received in Georgia in the past five years, construction firms**



Note: "WBE" represents white women-owned firms.

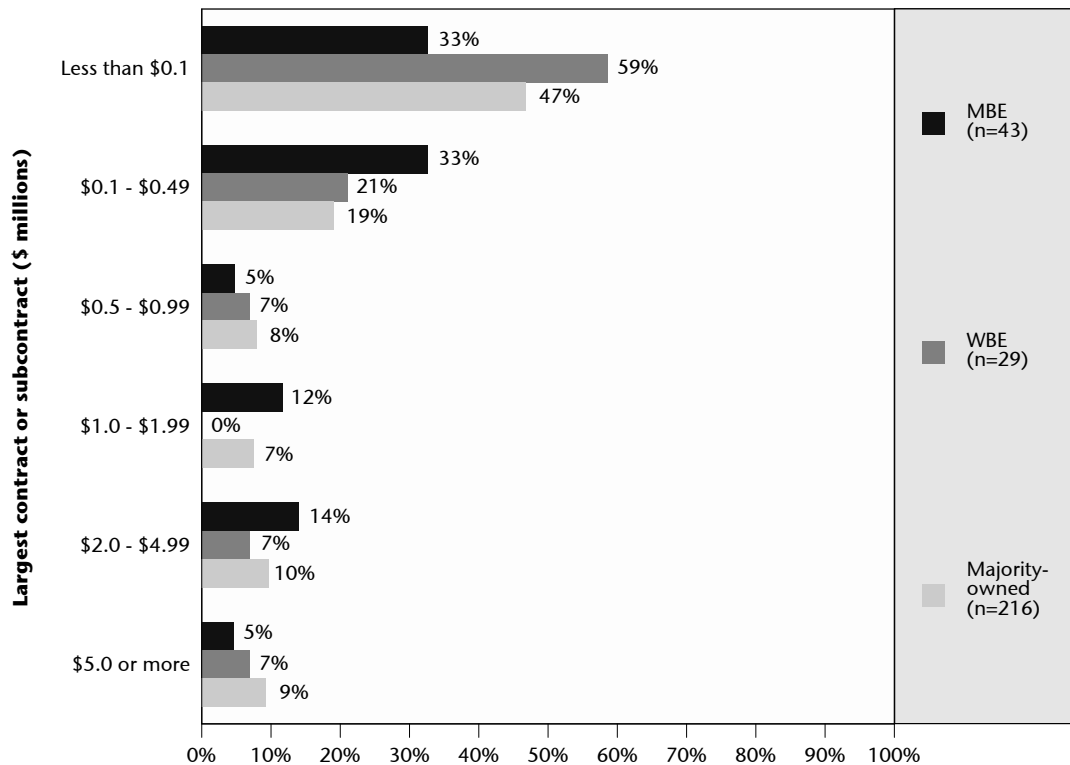
Source: BBC Research & Consulting from 2011 Availability Interviews.

**Engineering-related firms.** Among engineering industry firms, almost one-third of MBEs reported that the largest contract that they received in the past five years was worth \$1 million or more. The percentage for MBEs was higher than majority-owned firms (26%) and WBEs (14%).

However, only 5 percent of MBE engineering-related firms reported receiving a contract of \$5 million or more, much less than the 9 percent found for majority-owned firms. Seven percent of WBEs reported this size of contract.

Nearly 60 percent of WBEs reported that the largest contract they had received in the past five years was worth less than \$100,000. Just one-third of MBEs and 47 percent of majority-owned firms said that the largest contract they had been awarded in the past five years was worth less than \$100,000.

**Figure F-9.**  
**Largest contract or subcontract that the company received in Georgia in the past five years, engineering-related firms**



Note: "WBE" represents white women-owned firms

Source: BBC Research & Consulting from 2011 Availability Interviews.

**Bid capacity.** Some recent legal cases regarding race- and gender-conscious contracting programs have considered the issue of the “relative capacity” of firms included in an availability analysis.<sup>3</sup> One approach to accounting for differing capacity between types of firms is to examine relatively small contracts, a technique noted in *Rothe*. In addition to examining small contracts, BBC directly measured bid capacity in its availability analysis.

**Measurement of bid capacity.** “Bid capacity” for a firm is measured as the largest contract or subcontract the firm bid on or performed in Georgia within the five years preceding when BBC interviewed the firm. BBC uses bid capacity as one factor in determining whether a firm would be available to bid on specific prime contracts and subcontracts.

**Assessment of possible disparities in bid capacity of MBE/WBEs and majority-owned firms.** The availability analysis produced a database of 929 firms potentially available for Georgia work.<sup>4,5</sup> The following analysis of bid capacity relies on the results of availability interviews.

One factor that affects bid capacity is the specializations of firms within the transportation contracting industry. Subindustries such as construction management involve larger projects. Other segments, such as surveying and mapping, typically involve smaller assignments. One way of controlling for variation in bid capacities in different subindustries is to assess whether a firm has a bid capacity above or below the median level of firms in a particular subindustry. BBC can then test whether minority- and women-owned firms bid on larger or smaller contracts or subcontracts compared with other firms in the same subindustry.

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<sup>3</sup> See, for example, the decision of the United States Court of appeals for the Federal Circuit in *Rothe Development Corp. v. U.S. Department of Defense*, 545 F.3d 1023 (Fed. Cir. 2008).

<sup>4</sup> Two hundred and forty-six of these firms were not included in the availability marketplace analysis reported in this section, because they did not supply answers to survey question D2 or D4 on the Availability Survey.

<sup>5</sup> See Appendix C for further description of the survey sample and process.

Figure F-10 indicates the median bid capacity among Georgia-based firms in each of the 19 industry segments within the construction and engineering-related subindustries included in the availability study. Note that the survey questions regarding the largest project that firms had bid on or been awarded captured data in dollar ranges rather than in specific dollar amounts.

**Figure F-10.**  
**Median bid capacity by subindustry**

Subindustry	Median Bid Capacity
<b>Construction</b>	
Highway and street construction	\$1 million to \$2 million
Bridge and elevated highway construction	\$1 million to \$2 million
Painting, striping and marking	\$1 million
Water, sewer, and utility lines	\$1 million
Asphalt, concrete and other paving materials	\$500,000 to \$1 million
Concrete work	\$100,000 to \$500,000
Construction materials	\$100,000 to \$500,000
Electrical work	\$100,000 to \$500,000
Grading, excavation, drainage and land prep	\$100,000 to \$500,000
Other construction	\$100,000 to \$500,000
Trucking, hauling and storage	Less than \$100,000
<b>Engineering-related</b>	
Construction management	\$1 million to \$2 million
Engineering	\$100,000 to \$500,000
Environmental services	\$100,000 to \$500,000
Environmental and materials testing	\$100,000 to \$500,000
Transportation planning	\$100,000 to \$500,000
Traffic control systems	\$100,000
Surveying and mapping	Less than \$100,000

Source: BBC Research & Consulting from 2011 Availability Interviews.

Firms with bid capacities above the median for their industry segments are counted as available for larger projects than most of the firms in their line of business (as well as being counted as available for smaller assignments). Thus, these firms figure more prominently in the availability analysis than firms with smaller bid capacities.

**Construction firms.** An initial question is whether minority- and women-owned firms are as likely as majority-owned firms to have above-median bid capacity for their industry segment. The results for transportation construction firms shown in Figure F-11 indicate that, in aggregate, fewer MBEs and WBEs had an above-median bid capacity compared with majority-owned firms:

- One-third of African American-owned firms and 38 percent of other MBE construction firms<sup>6</sup> reported bid capacity that was higher than the median for their subindustry. Both results are lower than the 43 percent of majority-owned firms that reported above-median bid capacity.
- Only 27 percent of WBE construction firms indicated a bid capacity that was more than the median for their subindustry, which was also lower than the 43 percent found for majority-owned firms.

**Engineering-related firms.** The right-hand column of Figure F-11 shows the percentage of engineering-related firms reporting bid capacity that exceeded the median for their subindustry.

- African American-owned firms and other MBE engineering-related businesses were more likely than majority-owned firms to report a bid capacity that exceeded the median for their subindustry. About 42 percent of majority-owned firms in the engineering industry reported a bid capacity that exceeded the median for their subindustry. The percentages for African American-owned firms (50%) and other MBEs (47%) were higher.
- As with construction, engineering-related WBEs were less likely than other groups to report above-median bid capacity. Among engineering-related firms, 30 percent of WBEs had an above-median bid capacity.

**Figure F-11.**  
**Proportion of firms with above-median bid capacity by ownership**

Source:  
BBC Research & Consulting from 2011  
Availability Interviews.

Firm ownership	Construction	Engineering-related
African American	34 %	50 %
Other minority	38	47
Female	27	30
Majority-owned	43	42

<sup>6</sup> Other minority includes Hispanic American-, Asian Pacific American-, Subcontinent Asian American- and Native American-owned firms. Answers were combined because of a relatively low number of observations for these minority groups.

**Further analysis.** BBC considered whether neutral factors could account for the disparities in bid capacity identified for MBE and WBE construction firms and WBE engineering-related firms.

There are a number of variables from the availability interviews that may be correlated with bid capacity — for example, annual revenue, number of employees, and whether a firm has multiple establishments in Georgia. However, the direction of causation for these factors is unclear. Do firms have greater bid capacity because they have more employees, or do they have more employees because they bid on and win larger projects?

After considering the array of firm characteristics from the availability interviews, the study team determined that the age of firms was the neutral factor that might best explain differences in bid capacity (within a subindustry) while being truly external to that capacity. Theoretically, the longer firms are in business, the larger the contracts or subcontracts they might pursue.

To test this hypothesis, the study team conducted separate logistic regression analyses for the construction and engineering-related industries to determine whether bid capacity could be at least partly explained by the age of the firm and whether minority- and women-owned firms differ from majority-owned firms of similar ages (after controlling for subindustry).

The results for the Georgia construction industry are shown in Figure F-12. The results of the logistic regression indicated the following:

- The age of the firm was a significant predictor of having above-median bid capacity. The older a firm, the more likely it is to have an above-median bid capacity.
- Minority or female ownership did not have a statistically significant effect on having above-average bid capacity for firms in the construction industry after controlling for length of time in business.

**Figure F-12.**  
**Georgia transportation**  
**construction industry bid**  
**capacity model**

Note:

\*\* Denotes statistical significance at the 95% confidence level.

Variable	Coefficient	Z-Statistic
Constant	-0.97	-4.16 **
Age of firm	0.03	3.39 **
Minority	-0.03	-0.09
Female	-0.49	-1.28

Source:

BBC Research & Consulting from 2011  
Availability Interviews.



Results for the Georgia engineering-related industry are shown in Figure F-13. The logistic regression model for the industry indicated:

- Age of the firm was a significant predictor of having above-average bid capacity for engineering-related businesses. The older a firm, the more likely it is to have an above-median bid capacity.
- MBE ownership was a statistically significant predictor of having above-average bid capacity for engineering-related firms in the transportation contracting industry. Minority-owned engineering-related firms were more likely to have above-average bid capacity than other firms after controlling for subindustry and firm age.
- Female ownership did not have a statistically significant effect on having above-average bid capacity for firms in the engineering-related industry after controlling for other factors.

**Figure F-13.**  
**Georgia transportation**  
**engineering-related**  
**industry bid capacity**  
**model**

Note:

\*\* Denotes statistical significance at the 95% confidence level.

Variable	Coefficient	Z-Statistic
Constant	-1.53	-5.64 **
Age of firm	0.05	5.21 **
Minority	0.84	2.15 **
Female	-0.18	-0.38

Source:

BBC Research & Consulting from 2011  
Availability Interviews.

**Summary of markets, contracting roles and bid capacity.** The telephone interview results show that many MBE/WBEs attempt to work as prime contractors and as subcontractors on both public and private sector contracts:

- The telephone interview results for firms in the transportation construction industry found that MBE/WBEs were more likely to have pursued work in the private sector than the public sector within the past five years.
- Many MBEs, WBEs and majority-owned construction and engineering-related firms have bid as both prime contractors and subcontractors.

Data from the availability interviews showed more indices of success for WBEs than for MBEs:

- WBEs that had bid on public and private sector construction work were more successful in obtaining at least some work compared with MBEs and majority-owned firms.
- WBEs in the engineering industry were also more successful in receiving at least some private and public sector work than MBEs and majority-owned firms.
- However, WBE engineering-related firms were less likely than majority-owned firms to bid as prime consultants.

Some results indicated certain differences for MBEs:

- For both public and private sector work, MBE construction firms were less likely than majority-owned and WBE firms to have bid as a prime contractor.
- MBEs were also less likely to report that they had been successful when pursuing public and private sector work.

There were also differences in the largest transportation-related contract and subcontract that firms had received in Georgia in the past five years. Among construction firms, more majority-owned firms than MBE/WBEs had received contracts or subcontracts worth at least \$1 million. This was also true for engineering-related firms when examining contracts of \$5 million or more. These differences were more pronounced for WBEs than for MBEs.

BBC also examined the largest contracts firms had bid on or received in the transportation contracting industry in Georgia in the past five years (“bid capacity”).

- Minority- and women-owned construction firms were less likely than majority-owned firms to have bid capacity exceeding the median for their subindustry. Further analysis, however, found that these differences could be explained by the age of these firms.
- Minority-owned firms in the engineering industry were more likely to have above-average bid capacity than other firms with similar specializations. This difference persisted even after controlling for firm age.
- On the other hand, WBEs were less likely than other engineering-related firms to report bidding on or winning relatively large contracts. Age of firm explained most of these differences for WBEs.

## Business Closures, Expansions and Contractions

Having examined different markets and contracting roles within the transportation contracting industry, Appendix F more broadly examines different businesses outcomes, including closure, expansion and contraction.

BBC used U.S. Small Business Administration (SBA) data to examine outcomes for minority- and women-owned firms in Georgia and the nation. The SBA analyses pertain to minority-owned businesses, by demographic group, in comparison with all firms.

**Business closure.** High rates of business failures may reflect adverse business conditions faced by minority business owners.

**Rates of business closures in Georgia.** A 2010 SBA report investigated business dynamics and whether minority-owned companies were more likely to close than other firms. By matching data from business owners who responded to the 2002 U.S. Census Bureau Survey of Business Owners (SBO) to data from the Census Bureau's 1989-2006 Business Information Tracking Series, the SBA reported on establishment death rates in each state between 2002 and 2006 across sectors of the economy.<sup>7</sup>

Figure F-14 illustrates that 41 percent of African American-owned businesses operating in Georgia in 2002 had closed by the end of 2006, a higher rate than that of other groups. Hispanic American- and Asian American-owned firms also had closure rates higher than for non-minority-owned businesses during this time period. Disparities in closure rates for African American-owned firms, compared to white-owned firms, appear to have been similar in Georgia and in the United States during the same time period.

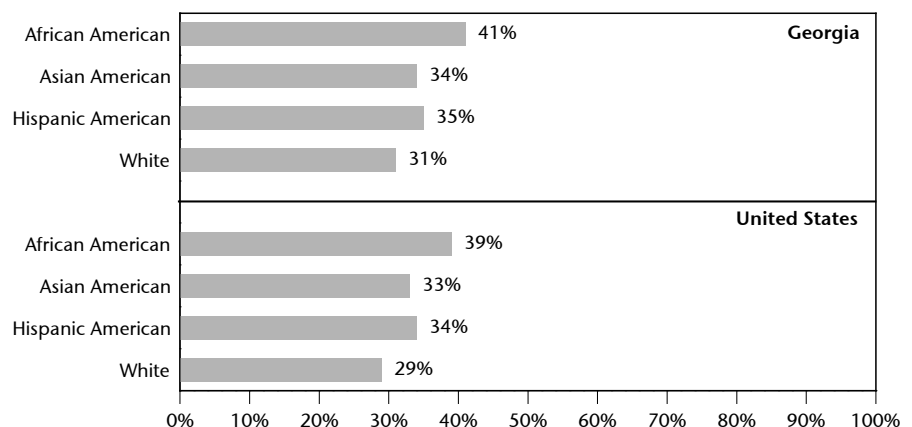
**Figure F-14.**  
**Rates of business**  
**closure in Georgia**  
**and the U.S.,**  
**2002-2006**

**Note:**

Data refer only to non-publicly held businesses only. As sample sizes are not reported, statistical significance of these results cannot be determined; however, statistics are consistent with SBA data quality guidelines.

**Source:**

Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



<sup>7</sup> Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.

**Rates of business closures by industry.** Although the SBA analysis does not include state-specific results by industry, it did examine nationwide firm closure rates by race/ethnicity for 21 industry classifications. Figure F-15 compares national rates of firm closure for two of these industry classifications: construction and professional, scientific and technical services (which includes engineering). Closure rates for all industries by race/ethnicity are also shown for comparison.

- African American-owned businesses operating in 2002 had the highest rate of closure by 2006 in the construction industry, and their closure rate in construction was higher than the African American closure rate for all industries.
- African American-owned professional, scientific and technical services firms had higher closure rates than those owned by other racial/ethnic groups.
- Compared to white-owned firms, Hispanic American-owned businesses in the United States were more likely to have closed in both the construction and professional, scientific and technical services industries.
- Asian American-owned professional, scientific and technical services businesses open in 2002 were more likely than white firms to close by 2006.

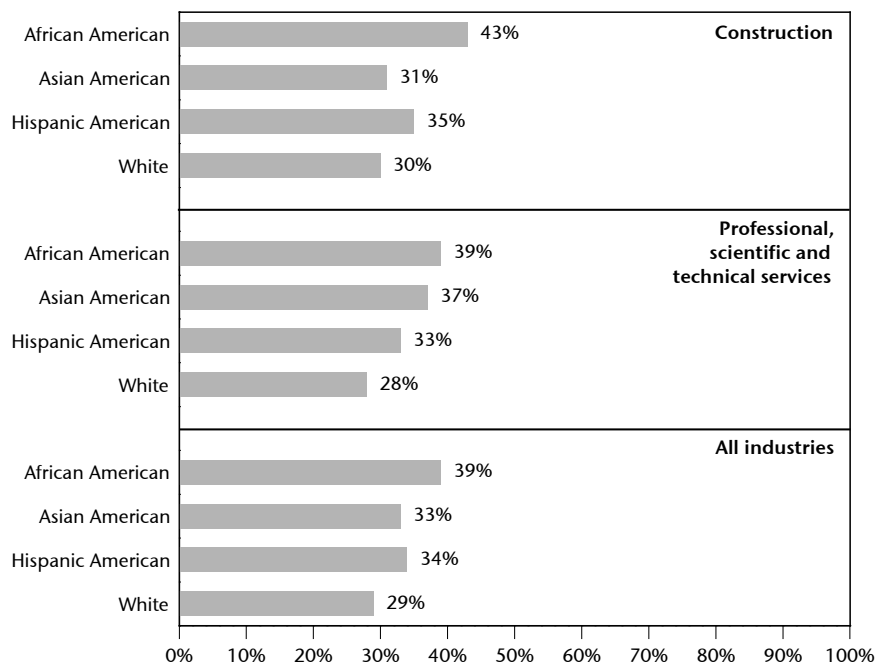
**Figure F-15.**  
**Rates of business**  
**closure, 2002-2006,**  
**construction;**  
**professional, scientific**  
**and technical services;**  
**and all industries in**  
**the U.S.**

**Note:**

Data refer only to non-publicly held businesses. As sample sizes are not reported, statistical significance of these results cannot be determined; however, statistics are consistent with SBA data quality guidelines.

**Source:**

Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



**Successful versus unsuccessful closures.** Not all firm closures can be interpreted as a business “failure.” Firms may also close when an owner retires or a more profitable business alternative emerges, both of which represent successful closures.

The 1992 Characteristics of Business Owners (CBO) Survey is one of the few Census Bureau sources to classify firm closures (by race/ethnicity) into successful and unsuccessful subsets.<sup>8</sup> The CBO survey, completed in 1996, asked owners of businesses that had closed between 1992 and 1995 the question, “Which item below describes the status of this business at the time the decision was made to cease operations?” Only the responses “successful” and “unsuccessful” were permitted. A firm that reported to be unsuccessful at time of closure was understood to have failed.

Figure F-16 on the following page shows comparative data for the proportion of firms that closed for failure in the U.S. between 1992 and 1995.<sup>9,10</sup> Failure rates are shown for all businesses and for the construction and professional, scientific and technical services industries.

According to the CBO, African American-owned firms were the most likely to report being “unsuccessful” at the time in which their business closed. About 77 percent of the African Americans who had owned and closed a business reported an unsuccessful business or business status. In contrast, only 61 percent of non-minority men who had owned a business said that the business was unsuccessful at time of closing.

Differences in the successful versus unsuccessful closing of firms were only somewhat narrower for other groups:

- About 71 percent of Hispanic Americans who had owned and closed businesses reported the business to be unsuccessful at time of closing, a substantial difference from the result for all firms.
- About 73 percent of other minorities who had owned and closed firms reported the business to be unsuccessful, also higher than the rate for all firms.

The difference in successful versus unsuccessful closure rates for women-owned businesses was similar to that of all businesses.

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<sup>8</sup> CBO data from the 1997 and 2002 Economic Censuses do not include statistics on successful and unsuccessful closure. To date, the 1992 CBO is the only U.S. Census dataset that includes such statistics.

<sup>9</sup> All CBO data should be interpreted with caution as firms that did not respond to the survey cannot be assumed to have the same characteristics of ones that did. Holmes, Thomas J. and James Schmitz. 1996. “Nonresponse Bias and Business Turnover Rates: The Case of the Characteristics of Business Owners Survey.” *Journal of Business & Economic Statistics*. 14(2): 231-241. This report does not include CBO data on overall firm closure rates because firms not responding to the survey were found to be much more likely to have closed than ones that did.

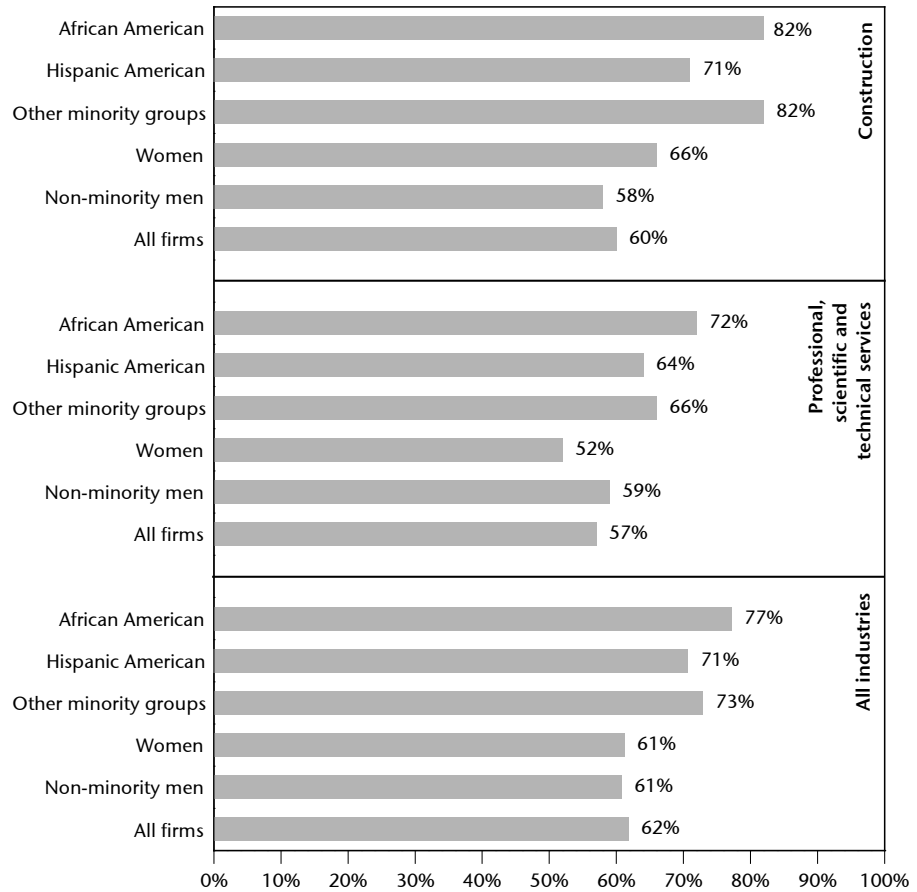
<sup>10</sup> This study includes CBO data on firm success because there is no compelling reason to believe that closed firms responding to the survey would have reported different rates of success/failure than those closed firms that did not respond to the survey. Headd, Brian. U.S. Small Business Administration, Office of Advocacy. 2000. *Business Success: Factors leading to surviving and closing successfully*. Washington D.C.: 12.

In the construction industry, African American- and Hispanic American-owned businesses were more likely to report an unsuccessful closure than all firms, as were businesses owned by other minorities. Women-owned businesses were also more likely to report an unsuccessful closure compared to the average for all businesses in the construction industry.

The pattern was similar in the professional, scientific and technical services industry with one exception: women-owned businesses were less likely to report an unsuccessful closure than the average for all businesses in this industry: about 57 percent of all firms but only 52 percent of women-owned businesses reported unsuccessful closure.

**Figure F-16.**  
**Comparative**  
**“failure” rates for**  
**firms that closed**  
**between 1992 and**  
**1995 in the U.S.**

Source:  
U.S. Census Bureau, 1996  
Characteristics of Business Owners  
Survey (CBO).



**Reasons for differences in failure rates.** Several researchers have offered explanations for higher rates of successful closure among non-Hispanic white-owned firms and higher rates of failure among minority- and women-owned businesses:

- Minority business failure is largely due to barriers in access to capital. Regression analysis has identified initial capitalization as the most significant factor in determining firm viability. Because African American-owned businesses secure smaller amounts of debt equity in the form of loans, they are more liable to fail. Difficulty in accessing capital is found to be particularly acute for minority firms in the construction industry.<sup>11</sup>
- Prior work experience in a family member's business or similar experiences are found to be strong determinants of business viability. Because African American business owners are much less likely to have such experience, their firms are less likely to survive.<sup>12</sup> Similar research has been conducted for women-owned businesses, which found gender gaps in the likelihood of business survival.<sup>13</sup>
- Level of education is found to be a strong determinant in business survival. Educational attainment explains a significant portion of the gap in firm closure rates between African American and non-minority firms.<sup>14</sup>
- Non-minority business owners have the opportunity to pursue a wider array of business activities, which increases their likelihood of closing successful businesses to pursue more profitable business alternatives. Minority business owners, especially those who do not speak English, have limited employment options and are less likely to close a successful business.<sup>15</sup>
- The possession of greater initial capital and the generally higher levels of education among Asian Americans determine the high rate of survival of Asian American-owned firms compared to other minority-owned firms.<sup>16</sup>

In sum, national data indicate that African Americans, Hispanic Americans and other minorities who owned and closed firms are more likely than all firms to have done so because the firm was unsuccessful. Several studies have examined why business failure rates are higher for firms owned by certain minority groups at the national level.

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<sup>11</sup> Bates, Timothy and Caren Grown. 1991. "Commercial Lending Practices and the Development of Black-Owned Construction Companies." Center for Economic Studies, U.S. Census Bureau.

<sup>12</sup> Robb, A. and Fairlie, R. 2005. "Why are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital." University of California, Santa Cruz.

<sup>13</sup> Fairlie, R. and A. Robb. 2009. "Gender Differences in Business Performance: Evidence from the Characteristics of Business Owners Survey." University of California, Santa Cruz.

<sup>14</sup> Ibid. 24.

<sup>15</sup> Bates, Timothy. 2002. "Analysis of Young Small Firms That Have Closed: Delineating Successful from Unsuccessful Closures." Center for Economic Studies, U.S. Census Bureau.

<sup>16</sup> Bates, Timothy. 1993. "Determinants of Survival and Profitability Among Asian Immigrant-Owned Small Businesses." Center for Economic Studies, U.S. Census Bureau.

**Comparative rates of expansion and contraction.** Comparative rates of expansion and contraction of minority-owned and majority-owned businesses are also useful indicators of the success of minority-owned businesses. Again, only some of the data available for the nation are also available at the state level.

**Expansion.** The 2010 SBA study of minority business dynamics from 2002-2006 referenced above also examined the relative number of Georgia businesses expanding and contracting that were not publicly-held companies.

Figure F-17 compares the percentage of businesses that increased their total employment between 2002 and 2006. According to the SBA study, 29 percent of white-owned Georgia businesses expanded. Compared to white-owned companies, African American-owned businesses were less likely to expand (25%) during the 2002-2006 time period. Asian American-owned and Hispanic American-owned businesses were more likely to expand than white-owned firms. The results were similar when considering the nation as a whole.<sup>17</sup>

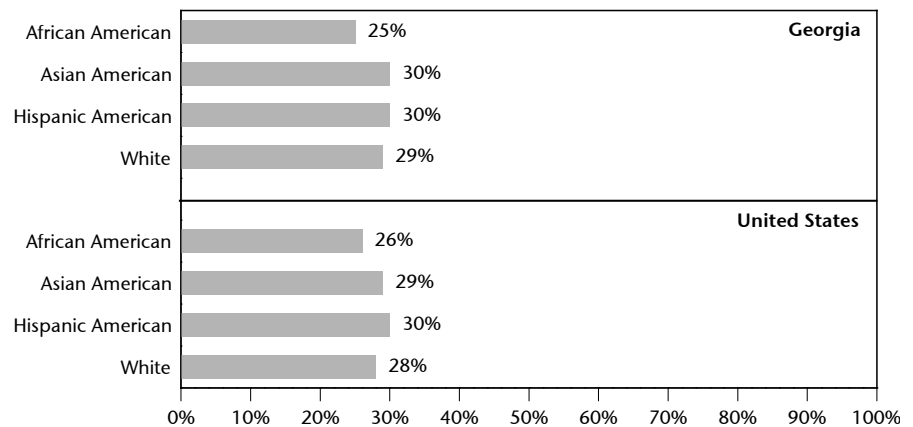
**Figure F-17.**  
**Percentage of firms**  
**expanding in Georgia**  
**and the U.S., 2002-2006**

**Note:**

Data refer only to non-publicly held businesses. As sample sizes are not reported, statistical significance of these results cannot be determined; however, statistics are consistent with SBA data quality guidelines.

**Source:**

Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



<sup>17</sup> Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



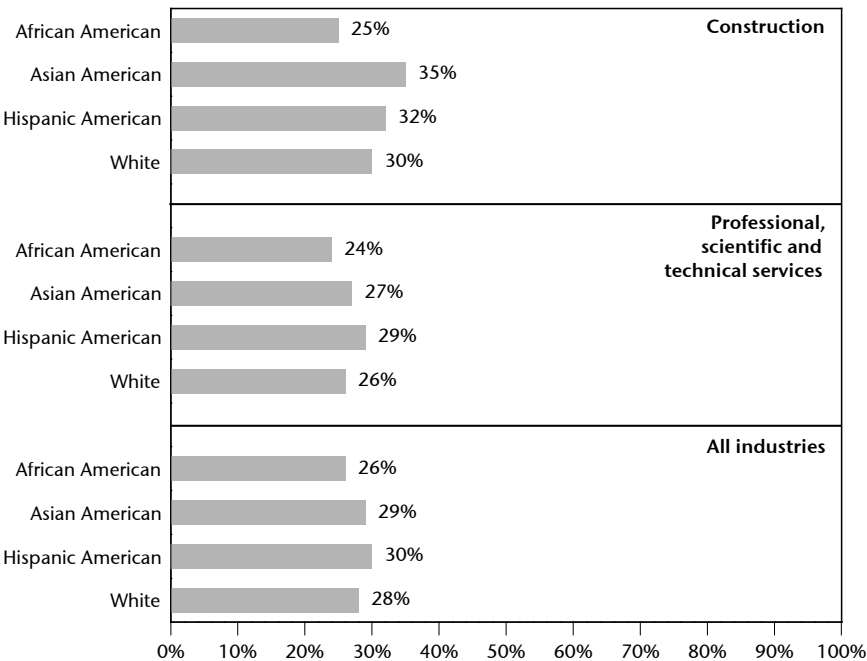
Figure F-18 illustrates the percentage of firms expanding in the construction and professional, scientific and technical services industries in the United States. The 2010 SBA study did not separately report results for firms in individual industries at the state or local level. Nationally, the patterns evident for individual industries were similar to those observed for all industries:

- African American-owned construction and professional, scientific and technical services businesses in 2002 were less likely to have expanded by 2006 than white-owned firms.
- Hispanic American- and Asian American-owned companies in both industries were slightly more likely to have expanded than white-owned businesses.

**Figure F-18.**  
**Percentage of firms**  
**expanding, 2002-2006,**  
**U.S. construction;**  
**professional, scientific**  
**and technical services;**  
**and all industries**

Note:  
Data refer only to non-publicly held  
businesses. As sample sizes are not  
reported, statistical significance of  
these results cannot be determined;  
however, statistics are consistent with  
SBA data quality guidelines.

Source:  
Lowrey, Ying. 2010. "Race/Ethnicity  
and Establishment Dynamics, 2002-  
2006." U.S. Small Business  
Administration Office of Advocacy.  
Washington D.C.



**Contraction.** Figure F-19 shows the percentage of businesses operating in 2002 that reduced their employment between 2002 and 2006. As with the analysis of expanding firms, these data track the activity of companies that are not publicly held. In both Georgia and the United States as a whole, African American-, Asian American- and Hispanic American-owned businesses were less likely to have contracted during 2002-2006 than white-owned businesses.

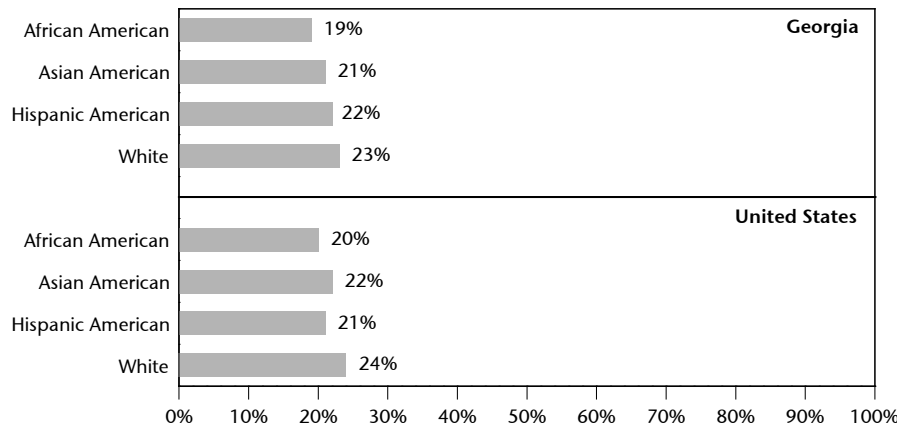
**Figure F-19.**  
**Percentage of firms contracting in Georgia and the U.S., 2002-2006**

Note:

Data refer only to non-publicly held businesses. As sample sizes are not reported, statistical significance of these results cannot be determined; however, statistics are consistent with SBA data quality guidelines.

Source:

Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



The SBA study did not report state-specific results relating to contraction in individual industries. However, Figure F-20 shows the share of businesses decreasing employment for the construction and professional, scientific and technical services industries at the national level.

Compared to white-owned construction firms in the United States, a similar or smaller percentage of minority-owned construction and professional, scientific and technical services businesses operating in 2002 contracted between 2002 and 2006.

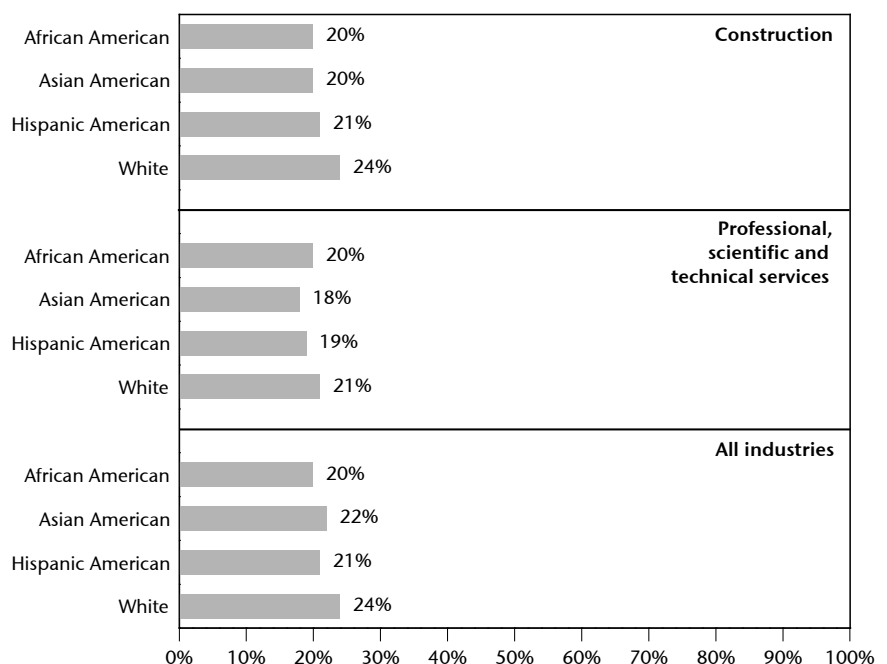
**Figure F-20.**  
**Rates of business contraction, 2002-2006, U.S. construction; professional, scientific and technical services; and all industries**

Note:

Data refer only to non-publicly held businesses. As sample sizes are not reported, statistical significance of these results cannot be determined; however, statistics are consistent with SBA data quality guidelines.

Source:

Lowrey, Ying. 2010. "Race/Ethnicity and Establishment Dynamics, 2002-2006." U.S. Small Business Administration Office of Advocacy. Washington D.C.



**Summary of analysis of business closures, expansions and contractions.** Analyses by the U.S. Small Business Administration found differences in rates of business closure, expansion and contraction for minority-owned firms between 2002 and 2006:

- Among groups examined in Georgia, African American-owned firms were the most likely to close and the least likely to expand. National data show the same pattern for African American-owned construction firms and professional, scientific and technical services firms.
- Hispanic American-owned businesses were also more likely to close than white-owned firms in Georgia. National data show higher closure rates for Hispanic American-owned firms in the construction and the professional, scientific and technical services industries.
- Asian American-owned firms were more likely to close than white-owned firms in Georgia. National data show the same pattern for Asian American-owned professional, scientific and technical services firms.
- National data indicate that closures for firms owned by African Americans, Hispanic Americans and other minority groups were much more likely to be “unsuccessful closures” compared with firms owned by non-minorities.
- Overall, minority-owned firms were less likely to contract than white-owned firms in Georgia. Hispanic American- and Asian American-owned businesses in Georgia were as likely to expand as white-owned businesses.

### **Business Earnings/Receipts**

Annual receipts and business earnings are also an indicator of the success of a business. The study team examined:

- Business receipts data published by the U.S. Census Bureau in the 2007 SBO;
- Data on business earnings for business owners from the 2000 Census and 2007-2009 American Community Survey (ACS); and
- Annual revenue data for firms in the Georgia construction and engineering-related industries collected as part of BBC availability interviews.

**Business receipts from 2007 Survey of Business Owners.** BBC examined receipts for firms in Georgia and the U.S. using data from the 2007 SBO conducted by the U.S. Census Bureau. BBC also analyzed receipts for firms in individual industries. The SBO separately reports business receipts for employer firms (i.e., those with paid employees other than the business owner and family members) and for all firms.<sup>18</sup>

**Receipts for all firms in Georgia.** Figure F-21 presents 2007 mean annual receipts for firms, by race/ethnicity and gender. The SBO data for firms across all industries in Georgia indicate that

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<sup>18</sup> We use “all firms” to denote SBO data used in this analysis; the data include incorporated and unincorporated firms, but not publicly-traded companies or other firms not classifiable by race/ethnicity and gender.

average receipts for minority- and women-owned businesses were much lower than the average for all firms, with some groups faring worse than others.

- Businesses owned by African Americans had average receipts of \$48,000, which was just 12 percent of the average for all firms in 2007 (\$397,000).
- At about \$147,000, average receipts for Native American-owned firms were about 37 percent of the average for all firms.
- Hispanic American-owned firms had about 46 percent of the average receipts of all firms.
- Asian American-owned firms had higher average receipts than other minority groups in 2007, although still below the average for all firms.
- Average receipts for women-owned firms were 37 percent of the average for all firms.

Consistent with the results shown in Figure F-21, a recent SBA study (2007) found similar differences when examining firms in all industries across the U.S.<sup>19</sup>

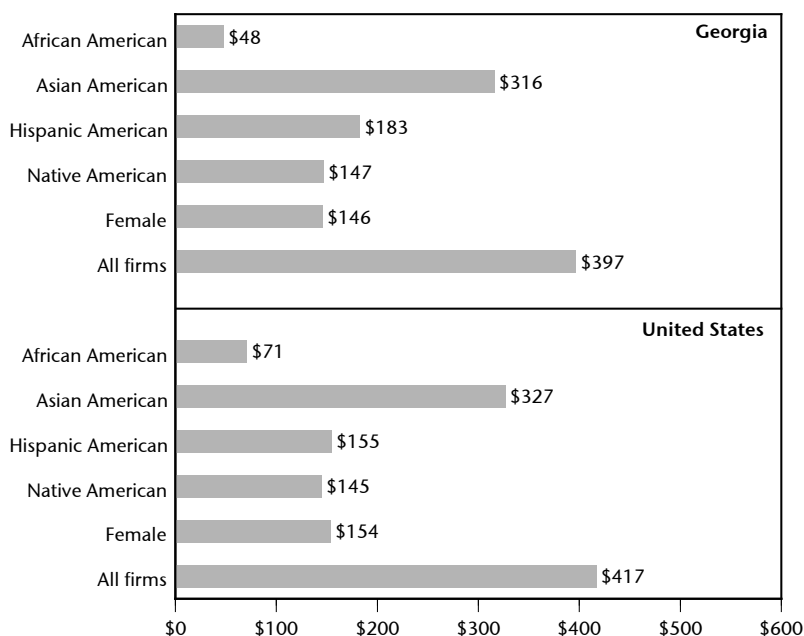
**Figure F-21.**  
**Mean annual receipts**  
**(thousands) for all firms, by**  
**race/ethnicity and gender of**  
**owners, 2007**

Note:

Includes employer and non-employer firms.  
Does not include publicly-traded companies  
or other firms not classifiable by race/ethnicity  
and gender.

Source:

2007 Survey of Business Owners, part of the  
U.S. Census Bureau's 2007 Economic Census.



<sup>19</sup> Lowrey, Ying. 2007. *Minorities in Business: A Demographic Review of Minority Business Ownership*. Office of Economic Research, Office of Advocacy, U.S. Small Business Administration.

Figure F-22 shows mean annual earnings in 2007 for employer firms in Georgia and the United States. Minority- and women-owned employer firms had substantially lower average business receipts than all employer firms in the Georgia and the nation.

- African American-owned employer firms had the lowest average receipts at less than one-third of the average for all employer firms in Georgia.
- Asian American-owned employer firms had receipts at less than half of the average for all employer firms in Georgia.
- The 2007 mean annual receipts for Hispanic American- and Native American-owned employer firms in Georgia were greater than firms owned by other minority groups but still below the average for all firms (\$2,012,000).
- At approximately \$1,143,000, women-owned employer firms averaged about 57 percent of the mean annual receipts for all employer firms in Georgia.

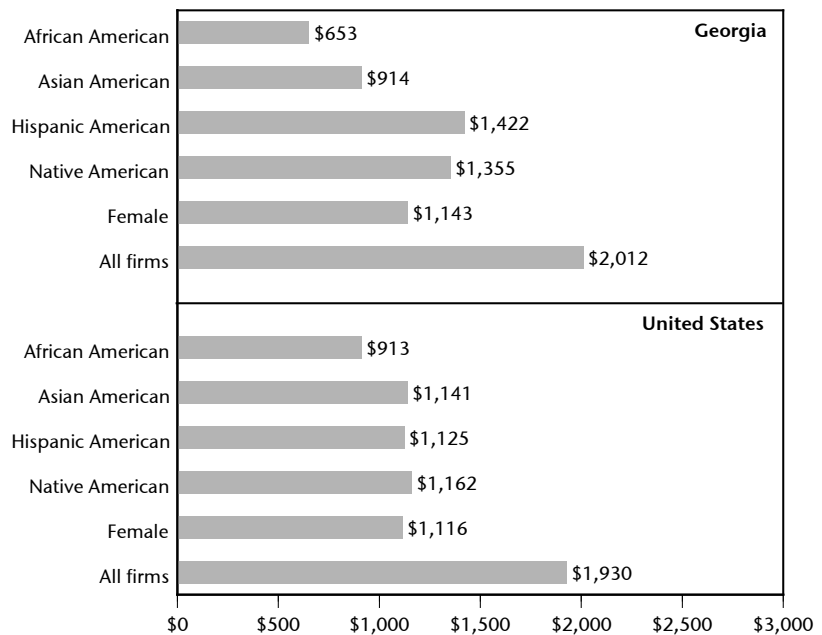
**Figure F-22.**  
**Mean annual receipts**  
**(thousands) for employer**  
**firms, by race/ethnicity and**  
**gender of owners, 2007**

Note:

Includes only employer firms. Does not include publicly-traded companies or other firms not classifiable by race/ethnicity and gender.

Source:

2007 Survey of Business Owners, part of the U.S. Census Bureau's 2007 Economic Census.



**Receipts for the Georgia construction industry.** The study team also analyzed SBO data for firms in the construction industry and the professional, scientific and technical services industry. Figure F-23, on the following page, presents mean annual receipts in 2007 for all firms (employer and non-employer firms combined) and for just employer firms, by racial, ethnic and gender group. Results are presented for Georgia and the United States.

In the Georgia construction industry, average 2007 receipts for most minority- and women-owned firms were lower than the average for all firms. Results for all firms (combining employer and non-employer firms) indicate the following:

- African American-owned construction firms in Georgia had average receipts that were about 22 percent of the average for all firms.

- Hispanic American-owned construction firms had approximately 33 percent of the average receipts of all construction companies.
- Asian American-owned construction firms had average receipts that were 54 percent of the average for all firms.
- Native American-owned construction firms in Georgia had the highest average receipts at \$426,000 — approximately \$17,000 above the average for all firms.
- Average receipts for women-owned construction firms in Georgia were 71 percent of the average for all firms.

**Figure F-23.**

**Mean annual receipts (thousands) for firms in the construction and professional, scientific and technical services industries, by race/ethnicity and gender of owners, 2007**

<b>Construction</b>	<b>All firms</b>	<b>Employer firms</b>
<b>Georgia</b>		
African American	\$ 88	\$ 1,234
Asian American	222	1,209
Hispanic American	133	909
Native American	426	3,101
Female	290	1,704
All firms	\$ 409	\$ 2,102
<b>United States</b>		
African American	\$ 105	\$ 1,021
Asian American	264	1,518
Hispanic American	167	1,083
Native American	224	1,357
Female	361	1,626
All firms	\$ 447	\$ 1,789
<b>Professional, scientific and technical services</b>	<b>All firms</b>	<b>Employer firms</b>
<b>Georgia</b>		
African American	\$ 56	\$ 553
Asian American	218	749
Hispanic American	114	776
Native American	126	415
Female	92	443
All firms	\$ 186	\$ 734
<b>United States</b>		
African American	\$ 77	\$ 707
Asian American	198	941
Hispanic American	121	693
Native American	108	629
Female	98	543
All firms	\$ 201	\$ 863

Notes: Does not include publicly-traded companies or other firms not classifiable by race/ethnicity and gender.

Source: 2007 Survey of Business Owners, part of the U.S. Census Bureau's 2007 Economic Census.

An examination of employer firms in construction yielded similar results: average receipts for African American-, Asian American-, Hispanic American- and women-owned firms had between 43 percent and 81 percent of the average annual receipts in Georgia in 2007.

**Receipts for the Georgia professional, scientific and technical services industry.** Figure F-23 also examines the Georgia professional, scientific and technical services industry. As with construction, minority- and women-owned firms had lower average receipts than all firms. Results for all firms (including employer and non-employer firms) in this industry show:

- Average receipts for firms owned by African Americans were about \$56,000, which was 30 percent of the average for all firms.
- Hispanic American-owned firms had average receipts of \$114,000 — 61 percent of the average for all firms.
- Native American-owned businesses had average receipts of \$126,000, still substantially less than the average for all companies (\$186,000).
- Asian American-owned firms had average receipts that were higher than the average for all companies.
- Women-owned firms' average receipts were less than half of the average for all companies (\$92,000 versus \$186,000 for all firms).

When considering only employer firms in professional, scientific and technical services, African American-, Native American- and women-owned firms had average receipts below the average for all companies in Georgia. Receipts for Asian American- and Hispanic American-owned firms were similar to all employer firms in that industry.

**Business earnings for business owners.** In order to assess the success of self-employed minorities and women in the study industries, BBC examined earnings using Public Use Microdata Samples (PUMS) from the 2000 U.S. Census of Population (Census) and 2007-2009 ACS. BBC analyzed incorporated and unincorporated business owners, age 16 and over, who reported positive business earnings.

**Construction business owner earnings in 1999.** Figure F-24 shows average earnings in 1999 for business owners in the construction industry in Georgia and the United States. The following results are based on the 2000 Census, in which individuals were asked to give their business income for the previous year:

- On average, African American construction business owners in Georgia earned about \$23,600, substantially less than the \$30,300 average for non-Hispanic white construction business owners (a statistically significant difference at the 90 percent confidence level).
- Asian American and Hispanic American owners of construction businesses had business earnings similar to non-Hispanic whites.
- Other minority construction business owners (including Native American owners) earned an average of \$19,000, much lower than the average for non-Hispanic whites and a statistically significant difference.
- Mean annual earnings for female construction business owners in Georgia (about \$20,900) were less in 1999, on average, than male business owner earnings (\$29,800), and the difference was statistically significant.

**Figure F-24.**  
**Mean annual business owner earnings in the construction industry, 1999**

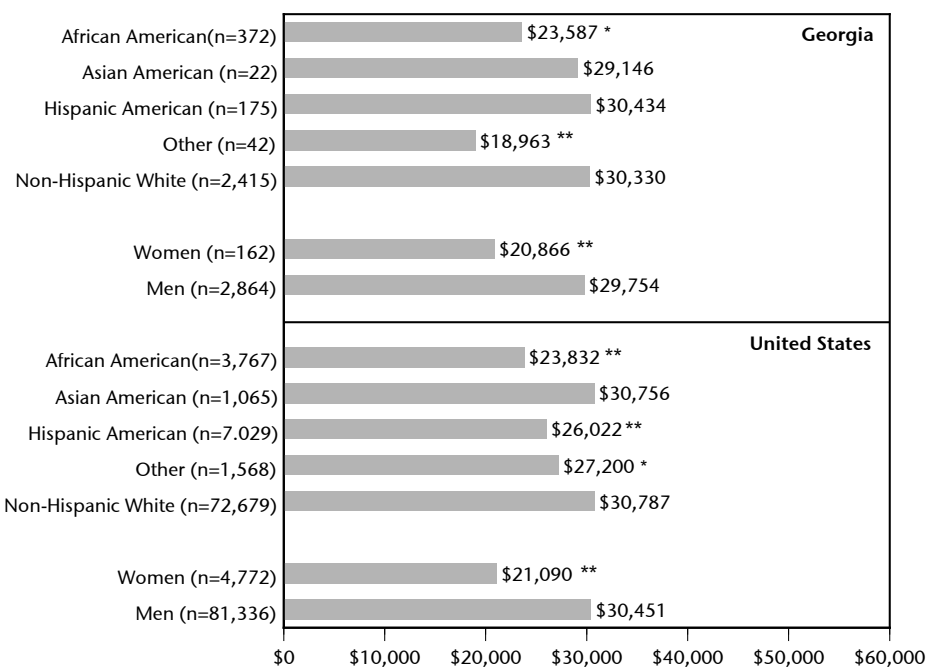
**Note:**

The sample universe is business owners age 16 and over who reported positive earnings. All amounts in 1999 dollars.

\*,\*\* Denotes statistically significant differences from non-Hispanic whites (for minority groups) or from men (for women) at the 90% and 95% confidence level, respectively.

**Source:**

BBC Research & Consulting from 2000 U.S. Census 5% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.





**Construction business owner earnings in 2006-2009.** The 2007-2009 ACS also reports business owner earnings. Due to the way each year's ACS survey is conducted, earnings for business owners reported in the 2007-2009 sample are for the previous 12 months between 2006 and 2009.<sup>20</sup> All dollar amounts are in 2009 dollars.

Figure F-25 shows business earnings in 2006-2009 for owners in the construction industry in Georgia and the United States.

- Similar to 2000, there were large, statistically significant disparities in earnings for construction businesses owned by African Americans, other minorities and women. For example, African American owners of construction businesses earned \$25,911, on average, which was substantially below the mean earnings for non-Hispanic white business owners (\$32,089).
- Unlike 2000, there was a statistically significant disparity in the earnings for Hispanic business owners.
- Asian American business owners also had lower earnings than non-Hispanic whites in 2006-2009, but the difference was not statistically significant.

**Figure F-25.**  
**Mean annual business owner earnings in the construction industry, 2006-2009**

Note:

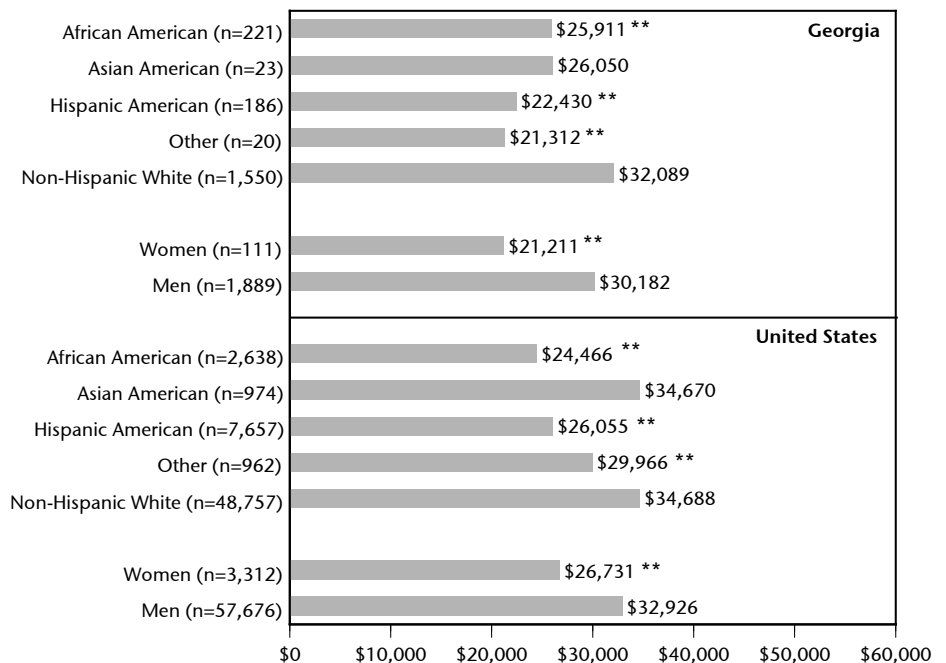
The sample universe is business owners age 16 and over who reported positive earnings.

All amounts in 2009 dollars.

\*,\*\* Denotes statistically significant differences from non-Hispanic whites (for minority groups) or from men (for women) at the 90% and 95% confidence level, respectively.

Source:

BBC Research & Consulting from 2007-2009 ACS 3% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.



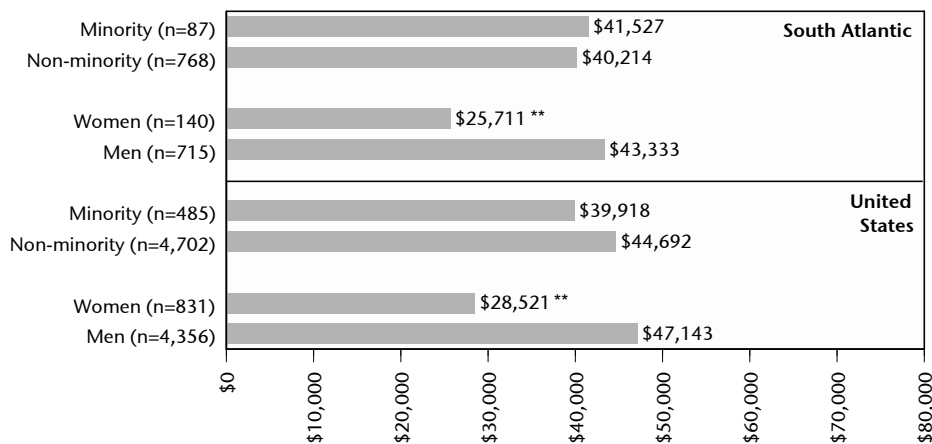
<sup>20</sup> For example, if a business owner completed the survey on January 1, 2007, the figures for the previous 12 months would reference January 1, 2006 to December 31, 2006. Similarly, a business owner completing the survey December 31, 2009 would reference amounts since January 1, 2009.

**Engineering-related business owner earnings in 1999.** As with the construction industry above, BBC examined average earnings in 1999 for engineering-related business owners. Due to small sample sizes, BBC was unable to report robust figures for average earnings of minority business owners in the Georgia engineering industry. Instead, Figure F-26 shows average earnings in 1999 for engineering-related business owners in the South Atlantic Census Division<sup>21</sup> (referred to in the following discussion as the South Atlantic region). Again, the following results are based on the 2000 Census, in which individuals were asked to give their business income for the previous year:

- On average, minorities who owned engineering-related businesses in the South Atlantic region earned \$41,527 in 1999, about the same as average earnings of non-Hispanic white business owners.
- Mean annual earnings for female owners of engineering-related businesses in the South Atlantic region in 1999 (\$26,000) were less, on average, than those for male business owners (\$43,000), a statistically significant difference.

Figure F-26 illustrates these results.

**Figure F-26.**  
**Mean annual business owner earnings in the engineering-related industry, 1999**



Note: The sample universe is business owners age 16 and over who reported positive earnings. "Minority" includes African Americans, Hispanic Americans, Asian-Pacific Americans, Subcontinent Asian Americans, Native Americans and other minority groups. Sample sizes for these race/ethnicity groups were too small to analyze individually. All amounts in 1999 dollars.

\*\*\* Denotes statistically significant differences from non-Hispanic whites (for minority groups) or from men (for women) at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2000 U.S. Census 5% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

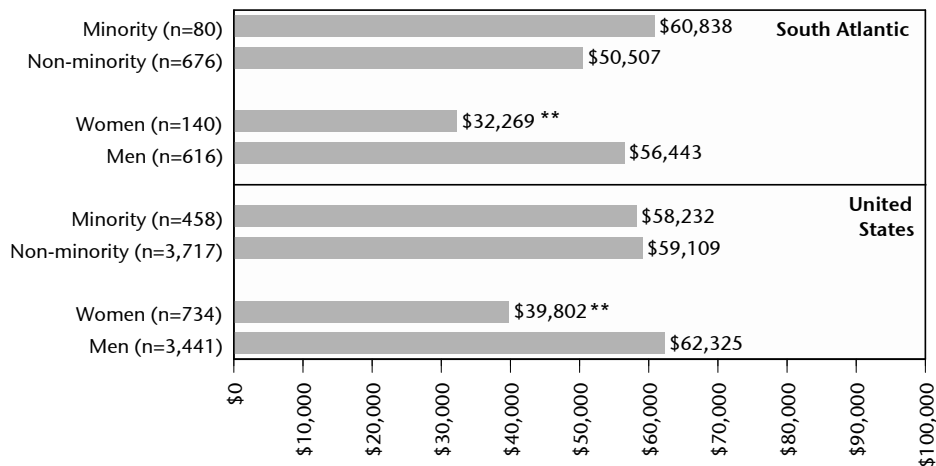
<sup>21</sup> The South Atlantic region includes Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia and West Virginia.

**Engineering-related business owner earnings in 2006-2009.** As noted above, earnings for business owners reported in the 2007-2009 sample are for the previous 12 months between 2006 and 2009. All dollar amounts are given in 2009 dollars. Due to small sample sizes for minority business owners in the Georgia engineering industry, BBC examined the South Atlantic region as a whole.

Figure F-27 shows lower business earnings in 2006-2009 for female owners in engineering-related businesses in the South Atlantic region and the United States, but higher business earnings for minority owners. The difference in business earnings for women was statistically significant.

**Figure F-27.**

**Mean annual business owner earnings in the engineering-related industry, 2006-2009**



Note: The sample universe is business owners age 16 and over who reported positive earnings. "Minority" includes African Americans, Hispanic Americans, Asian-Pacific Americans, Subcontinent Asian Americans, Native Americans and other minority groups. Sample sizes for these race/ethnicity groups were too small to analyze individually.

All amounts in 2009 dollars.

\*,\*\* Denotes statistically significant differences from non-Hispanic whites (for minority groups) or from men (for women) at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2007-2009 ACS 3% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

**Regression analysis of business earnings.** Differences in business owner earnings may be at least partially attributable to neutral factors such as age, marital status or educational attainment. BBC performed regression analysis using 2000 Census and 2007-2009 ACS data to examine whether disparities in business earnings for 1999 and for 2006-2009 remained after controlling for certain neutral factors.

BBC applied an ordinary least squares (OLS) regression to the data, and the model was very similar to those reviewed by the courts after other disparity studies.<sup>22</sup> The dependent variable in this model is the natural logarithm of business earnings. Business owners reporting zero or negative business earnings were excluded, as were observations for which the Census Bureau had imputed the value of business earnings. Along with variables for the race, ethnicity and gender of business owners, the model also included available measures from the PUMS data considered likely to affect earnings potential, including age, age-squared, marital status, ability to speak English well, disability condition and educational attainment.

For the construction industry, the study team developed two models:

- A model for business owner earnings in 1999 for the Georgia construction industry that included 1,964 observations; and
- A model for business owner earnings in 2006-2009 for the Georgia construction industry that included 1,508 observations.

Due to small sample sizes, BBC took a different approach when examining business owner earnings in the engineering-related industry. BBC created an engineering-related industry model for the South Atlantic region that included separate terms to account for the effect of business location in Georgia. These terms included an indicator variable for location in Georgia and interaction variables that indicated minority or female business owners in the state. This approach is similar to that used by other researchers.

BBC created the following models for the engineering-related industry:

- A model for business owner earnings in 1999 for the South Atlantic region that included 681 observations; and
- A model for business owner earnings in 2006-2009 for the South Atlantic region that included 664 observations.

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<sup>22</sup> For example, National Economic Research Associates, Inc. 2000. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Minnesota Department of Transportation; and National Economic Research Associates, Inc. 2004. *Disadvantaged Business Enterprise Availability Study*. Prepared for the Illinois Department of Transportation.

**Construction industry in Georgia — 1999.** Figure F-28 shows the results of the OLS model for 1999 earnings in the Georgia construction industry. The model indicates that some neutral factors are statistically significant in predicting the earnings of business owners in the construction industry. Older business owners had greater earnings (but age had less of an effect for the oldest individuals) as did married business owners. Construction business owners who were disabled, business owners who did not attain at least a high school education and those who completed some college had lower earnings, on average.

After holding neutral factors equal:

- A statistically significant disparity remains for African American business owners in the Georgia construction industry in 1999.
- There was also a statistically significant disparity in construction business owner earnings for women.

**Figure F-28.**  
**Georgia construction business owner earnings model, 1999**

Variable	Coefficient	t-statistic
Constant	8.068	22.74 **
Age	0.087	5.67 **
Age-squared	-0.001	-5.88 **
Married	0.122	1.76 *
Speaks English well	0.030	0.15
Disabled	-0.206	-1.99 **
Less than high school	-0.210	-3.06 **
Some college	-0.146	-1.78 *
Four-year degree	-0.112	-0.71
Advanced degree	-0.478	-1.43
African American	-0.286	-2.74 **
Asian American	-0.115	-0.33
Hispanic American	0.072	0.41
Other Minority	-0.225	-1.28
Female	-0.549	-3.62 **

Note: \*\*\* Denotes statistical significance at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2000 Census 5% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

**Construction industry in Georgia — 2006 to 2009.** Figure F-29 illustrates the results of the OLS model for 2006-2009 earnings in the Georgia construction industry. As in the model for 1999 earnings, this model indicates that some neutral factors are statistically significant in predicting the earnings of business owners in the construction industry. Older business owners had greater earnings (but age has less of an effect for the oldest individuals), as did married business owners. As with 1999 earnings, owners who did not attain at least a high school education had lower earnings in the Georgia construction industry, on average.

After holding neutral factors equal:

- A statistically significant disparity was observed for female business owner earnings in the Georgia construction industry.
- Differences in mean business earnings for minorities in 2006-2009 were not statistically significant, holding other factors equal.

**Figure F-29.**

**Georgia construction business owner earnings model, 2006-2009**

Variable	Coefficient	t-statistic
Constant	7.533	15.87 **
Age	0.100	4.46 **
Age-squared	-0.001	-4.83 **
Married	0.416	4.64 **
Speaks English well	-0.031	-0.18
Less than high school	-0.250	-2.76 *
Some college	0.120	1.07
Four-year degree	0.143	0.66
Advanced degree	-0.618	-0.68
African American	-0.215	-1.37
Asian American	-0.045	-0.25
Hispanic American	0.133	0.90
Other Minority	0.098	0.40
Female	-0.344	-2.24 *

Note: \*\*, \* Denotes statistical significance at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2007-2009 ACS 3% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

**Engineering-related industry in Georgia — 1999.** Figure F-30 presents the results of the OLS model of business owner earnings specific to the South Atlantic region engineering-related industry in 1999. As explained above, BBC created an engineering-related industry model for the larger South Atlantic region (which includes Georgia) due to small sample sizes for Georgia alone. This model, however, includes interaction terms for evaluating the effect of owning a business in Georgia. A number of neutral factors are statistically significant in explaining business earnings in the South Atlantic region engineering-related industry. As in the construction models, older business owners had greater earnings (but this marginal effect declined for the oldest individuals) as did married business owners. Business owners who were disabled tended to have lower business earnings.

After accounting for neutral factors, the model indicates that:

- Female business owners earned less on average than men in the engineering-related industry (statistically significant difference).<sup>23</sup>
- Overall, there were no statistically significant differences in business earnings for minorities in the South Atlantic region engineering-related industry.
- African Americans in Georgia, however, earned less, on average, than similarly situated African American business owners in the engineering-related industry in the broader region.

**Figure F-30.**  
**South Atlantic region engineering-related industry business owner earnings model, 1999**

Variable	Coefficient	t-statistic
Constant	6.939	5.77 **
Age	0.123	4.38 **
Age-squared	-0.001	-4.97 **
Married	-0.003	-0.02
Speaks English well	0.271	0.30
Disabled	-0.589	-2.60 **
Less than high school	0.142	0.42
Some college	0.103	0.48
Four-year degree	0.262	1.28
Advanced degree	0.299	1.37
African American	0.132	0.47
Other Minority	0.240	1.10
Female	-0.911	-5.56 **
In Georgia	0.079	0.43
African American in Georgia	-1.288	-2.29 **
Other Minority in Georgia	0.408	1.17
Female in Georgia	0.326	0.87

Note: \*\*, \* Denotes statistical significance at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2000 Census 5% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.

<sup>23</sup> The indicator variable for firms located in Georgia and the interaction terms for women business owners in Georgia suggest that women did not have significantly different earnings in the wider South Atlantic region, even after controlling for other factors.

**Engineering-related industry in Georgia — 2006 to 2009.** Figure F-31 presents the results of the OLS model of business owner earnings specific to the South Atlantic region engineering-related industry for 2006-2009. As in the model for 1999 earnings, this model indicates that some neutral factors are statistically significant in predicting the earnings of engineering-related business owners. Older business owners had greater earnings but this marginal effect declined for the oldest individuals. Business owners with a four-year degree and owners with an advanced degree had greater business earnings on average.

- After accounting for neutral factors, the statistically significant disparity in earnings for female business owners.
- The model did not indicate a statistically significant difference in business earnings for minority business owners.

**Figure F-31.**  
**South Atlantic region engineering-related industry business owner earnings model, 2006-2009**

Variable	Coefficient	t-statistic
Constant	8.100	7.70 **
Age	0.078	2.14 *
Age-squared	-0.001	-2.52 *
Married	0.132	0.88
Speaks English well	-0.065	-0.13
Less than high school	-1.0699	-3.43 **
Some college	0.185	0.82
Four-year degree	0.650	3.03 **
Advanced degree	0.830	3.82 **
African American	-0.140	-0.32
Other Minority	0.168	1.00
Female	-0.729	-4.85 **
In Georgia	0.110	0.64
African American in Georgia	-0.403	-0.44
Other Minority in Georgia	-1.148	-1.05
Female in Georgia	-0.223	-0.44

Note: \*,\*\* Denotes statistical significance at the 90% and 95% confidence level, respectively.

Source: BBC Research & Consulting from 2006-2009 ACS 3% sample. The raw data extract was obtained through the IPUMS program of the MN Population Center: <http://usa.ipums.org/usa/>.



### Gross revenue of construction and engineering-related firms from availability

**interviews.** In the availability telephone interviews BBC conducted for this study, firm owners and managers were asked to identify the size range for their annual gross revenue for the past three years. A related question asked for gross revenue across all Georgia locations for multi-location firms, which is the result examined here.

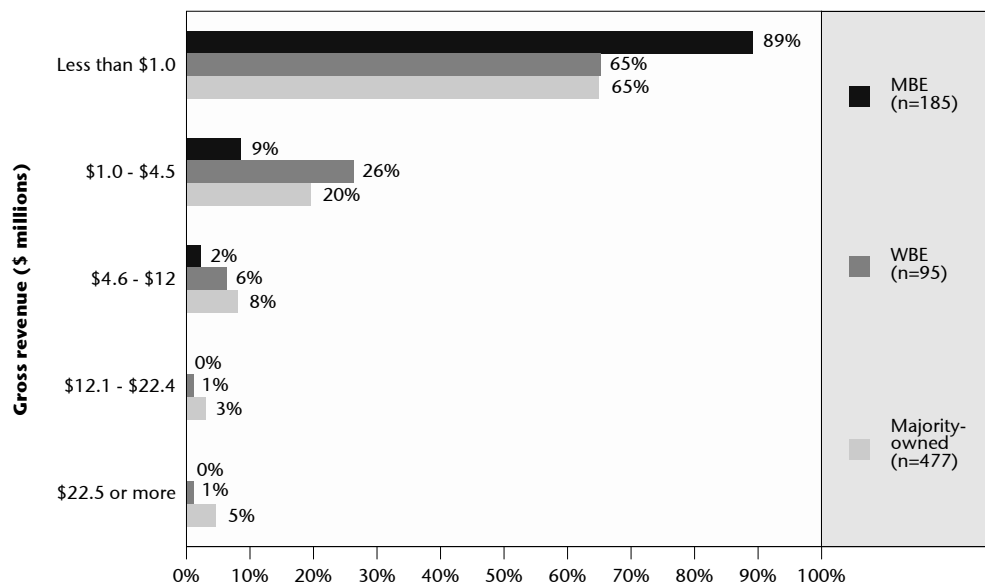
Within the Georgia transportation contracting industry, BBC separately examined gross revenue of construction and engineering-related businesses.

**Construction firms.** Figure F-32 examines the distribution of MBEs, WBEs and majority-owned construction industry firms by revenue class.

- A disproportionately large number of MBEs (89%) reported average revenue of less than \$1 million per year.
- A very small proportion of MBEs and WBEs reported average revenue of 4.6 million or more per year (2% of MBEs and 9% of WBEs) compared with results for majority-owned firms (16%). Reporting
- No MBE construction firms reported annual gross revenue of \$12.1 million or more.

**Figure F-32.**

**Gross revenue of company for all Georgia locations, construction industry**



Note: WBE is white women-owned firms.

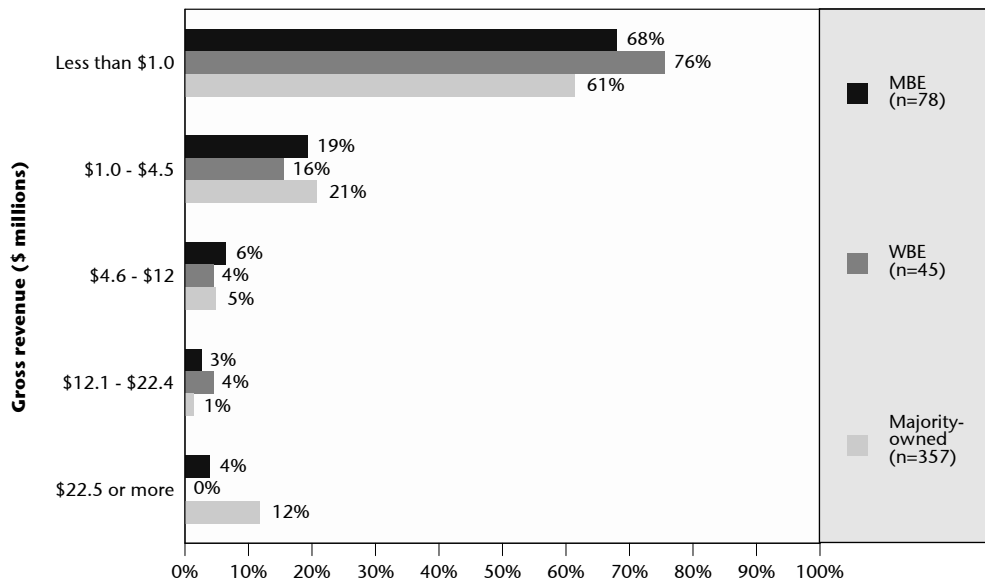
Source: BBC Research & Consulting from 2011 Availability Interviews.

**Engineering-related firms.** Engineering-related firms were also asked to identify gross revenue across all Georgia locations. Figure F-33 summarizes results.

- Three-quarters of WBEs reported gross revenue to be less than \$1 million. Compared with other groups, relatively more WBEs reported annual revenue in this lowest revenue category.
- No WBEs reported gross revenue of \$22.5 million or more in the past three years.
- Although some MBEs reported annual revenue of \$22.5 million or more, they accounted for a smaller share of minority-owned firms (4%) than majority-owned firms (12%).

**Figure F-33.**

**Gross revenue of company for all Georgia locations, engineering-related industry**



Note: WBE is white women-owned firms.

Source: BBC Research & Consulting from 2011 Availability Interviews.

**Summary of analysis of business receipts and earnings.** BBC examined a number of different data sources for business receipts and earnings for firms in Georgia.

- Analysis of 2007 SBO data, 2000 Census data and 2007-2009 ACS data for Georgia indicate a pattern of lower receipts for minority- and women-owned firms compared with all firms in the construction and the professional, scientific and technical services industries.
- Regression analyses using Census data for business owner earnings indicate that there were statistically significant disparities in earnings for the following groups after taking account of neutral factors:
  - African American business owners tended to earn less than non-Hispanic white business owners in 1999 in the Georgia construction industry; and
  - Female business owners tended to earn less than male business owners in the Georgia construction industry and the South Atlantic region engineering-related industry in both 1999 and 2006-2009.
- BBC also analyzed revenue data for firms in the Georgia transportation contracting industry collected as part of the disparity study's availability interviews.
  - Data indicate that most businesses, MBE/WBEs and majority-owned firms alike, report annual revenue of \$1 million or less.
  - However, few minority- and women-owned firms relative to majority-owned firms reach high revenue levels. This result is evident for both construction and engineering-related firms.

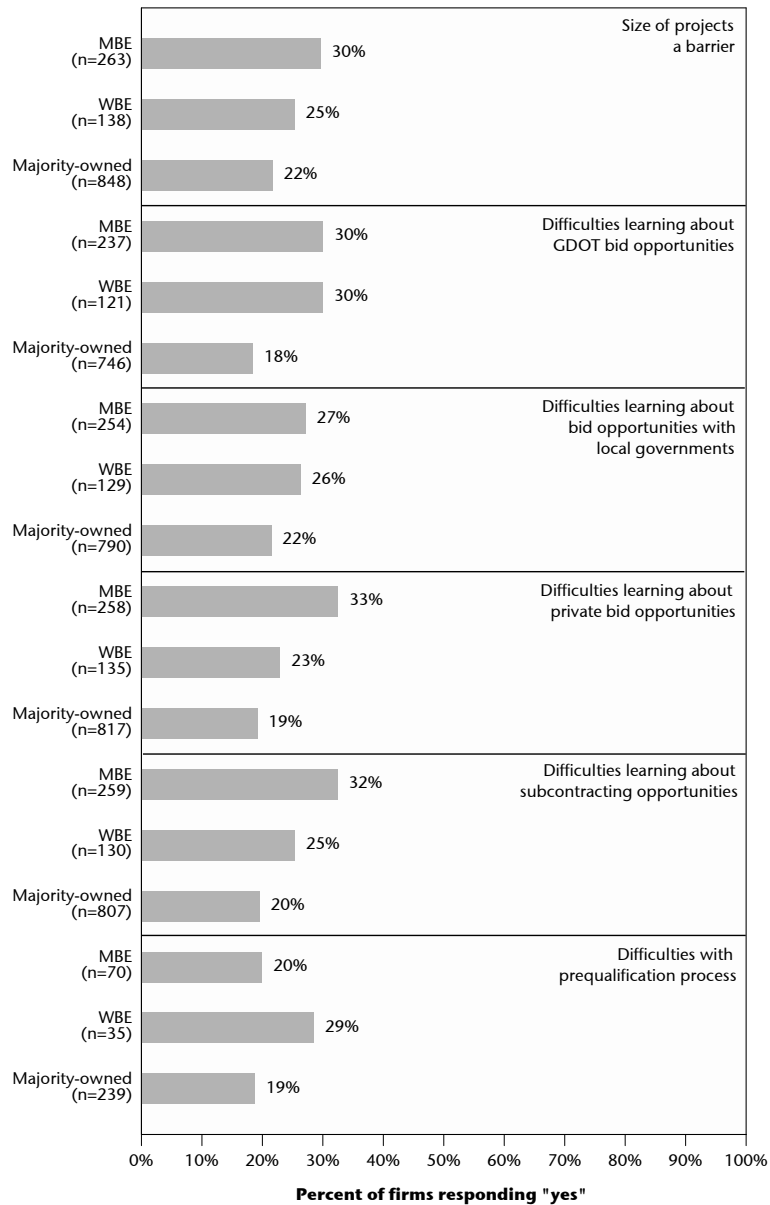
### **Difficulties and Potential Barriers to Starting or Expanding a Business**

As part of the availability interviews with Georgia businesses completed in the disparity study, the study team asked firm owners and managers if they had experienced barriers or difficulties associated with starting or expanding a business. BBC asked if:

- The size of projects had presented a barrier to bidding;
- The firm had experienced difficulties learning about bid opportunities with GDOT;
- The firm had experienced difficulties learning about bid opportunities with local governments or private companies;
- The firm had experienced difficulties learning about subcontracting opportunities in Georgia; and
- The prequalification process for GDOT work had presented difficulties for the firm.

Figure F-34 summarizes responses to these questions. Responses for construction and engineering-related firms have been combined.

**Figure F-34.**  
**Responses to 2011 availability interview questions from Georgia**  
**MBE, WBE and majority-owned construction and engineering-related firms**



Note: "WBE" represents white women-owned firms, "MBE" represents minority-owned firms and "Majority-owned" represents non-Hispanic white male-owned firms.

Source: BBC Research & Consulting.

- As shown in Figure F-34, MBEs and WBEs were more likely than majority-owned firms to report that the size of projects had been a barrier to bidding.
- MBEs and WBEs were also more likely than majority-owned firms to report difficulties learning about:
  - GDOT bid opportunities;
  - Local government bid opportunities;
  - Private sector bid opportunities; and
  - Subcontracting opportunities.
- Among firms that had looked into or applied for prequalification for GDOT contracts, WBEs appeared to be more likely than majority-owned firms to report difficulties with the prequalification process.

BBC also asked questions related to access to capital, timely payment, bonding and insurance; Appendix G reports those results.